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GLOBAL SEMINAR ON ANIMAL WELFARE

GSAW1 Global Seminar on Animal Welfare | Theme – One Welfare
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ACADEMIES OF VETERINARY SCIENCES

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AVS1 ACCREDITATIONS OF VETERINARY FACULTIES/SCHOOLS: PRESENT AND FUTURE
Tuesday, May 8, 2018
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AVS1 Continuous Veterinary Education and Veterinary Specialization
May 8, 2018
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POSTER PRESENTATIONS

PP1 Poster Presentations 1
Sunday, May 6, 2018
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Tuesday, May 8, 2018
09:00 – 14:30

AUTHOR INDEX

WVAC 2018 Abstract Book
AT1.01 - THE DIGITIZATION OF HEALTH

Adam Little
Texas A&M University, College Station/UNITED STATES OF AMERICA

Abstract: Technology has changed how we connect to each other, share experiences, and interact with businesses. However, one area that constantly seems to be left behind is healthcare. Whether for humans or animals, we are often left wondering why we don’t seem to see the current legal and policy changes, reengineering the other parts of our world. While it may not be as apparent on a day-to-day basis there are significant changes that are happening all around us largely driven by the increase digitization of our world. This is leading to new ways in which patients are empowered to play a more proactive role in their own health while raising new questions in areas such as data privacy and security. The convergence of biotechnology and computer science are creating new ways in which we are not just treating patients, but engineering disease out of out of species. What does this mean for the future of doctors and how will these improvements translate to the veterinary profession? This session will explore advances in healthcare and what we can learn for our own future. Objectives: Evaluation of the current state of digital health Address the lessons learned from human counterparts and examine the parallels between human healthcare and veterinary healthcare delivery Explore potential scenarios on the future of veterinary medicine and how technology will play a role in these directions.

AT1.02 - VETERINARY MEDICINE AND TELEHEALTH

Adam Little
Texas A&M University, College Station/UNITED STATES OF AMERICA

Abstract: Telehealth has gone from obscurity to the forefront of the veterinary industry. In this session, we will explore how we need to evolve our model of care to support a new generation of clients and patient needs in order to stay competitive with the continued fragmentation of the industry. By unpacking different models of telehealth, sharing lessons learned, and addressing challenges, attendees can go from the conference to the clinic with an implementation plan.

Objectives: - Overview of how telehealth is changing the veterinary profession and what it means for practice owners; - Address how the provision of veterinary services through telehealth will impact the traditional relationships veterinarians have had with their patients and clients; - Evaluate the current options that are available to practitioners and explore how different models of telehealth are currently being delivered.

Keywords: telehealth, technology

AT1.03 - TRENDS IN HEALTH AND TECHNOLOGY: A COMBINATION FOR INNOVATION!

Theresa Bernardo
University of Guelph, Ontario Veterinary College, Guelph/CANADA

Abstract: Many aspects of our lives have been disrupted by emerging technologies (communication, music, publishing, transportation, retail, recruiting, etc.), but they have not yet had a profound effect on the health of individuals and populations. We will examine past and future trends in technology and health, and look at real world examples of innovation that emerged at their intersection. Some have been borne of necessity through emergency response, others have been borrowed from human medicine, but they point the way to exciting new opportunities in many aspects of veterinary medicine, ranging from point-of-care testing and new delivery models for private practice, to surveillance and response to global disease outbreaks. We will start to make sense of this new field of health informatics, looking at how it has arisen, what it includes (everything from big data to sensors, electronic health records and social media) and how it all fits together.

Keyword: health informatics technology innovation

AT1.04 - BIG DATA: REAL WORLD EXAMPLES AND FUTURE IMPLICATIONS FOR HEALTH

Theresa Bernardo
University of Guelph, Ontario Veterinary College, Guelph/CANADA

Abstract: We know that cats rule the internet. Building on trends and real-world examples of innovation at the intersection of health and technology, we will have a closer look at big data, using cats as an example. We will look at what constitutes big data, the many sources of big data, the types of tools used for big data analytics, and the benefits that can be derived for health and wellness. In particular, we will see how records from millions of cats (big data) both provides evidence that cats do not frequently visit the vet and provides evidence that they should. We will look at how the average weight of a cat, customized for its breed and gender, can be reconstructed from millions of data points, can be used to create a predictive model and how this takes us one step closer to personalized medicine (or better, personalized health). We will also look at the impact that advances in machine learning, artificial intelligence and deep learning may have on our ability to diagnose and treat patients, as well as determine preventive measures and early interventions that will lead to more years of healthy life.

AT1 AMR Current Research

Monday, May 7, 2018
09:00 – 12:00

AT1.05 - VETERINARY EDUCATION – BEYOND THE BOUNDARIES

Stuart W. J. Reid
Royal Veterinary College University of London, Herfordshire/UNITED KINGDOM
Abstract: With the increasing globalisation the veterinary profession as well the expansion of the veterinary education “market”, there is now a strong argument to bolster interactions between supply and demand ends of the chain and to set provision of veterinary professionals and services in the context of international need. The advancements achieved by the different accreditor groupings around the world and, in particular, attempts at harmonisation, all confirm the complexity of the issues that require addressing at curriculum level that must be set beside the challenges of political and economic barriers to consolidation. In reviewing lessons learned from both within recognised geopolitical boundaries as well as between entities separated by location, professional code and trading block legalities, it is clear that communication, common aspiration and, above all, trust are pivotal regardless of the level of standard one might seek to apply. With mutual recognition still a rather distant idyll for most, the focus on harmonisation around realistic objectives must remain our primary focus, building on the genuine efforts of veterinary authorities, statutory bodies and educators and supported by intergovernmental agencies and global professional organisations. Whether or not one achieves these objectives in producing the veterinary professional of tomorrow, the reality in dealing with trade, transboundary disease and disaster management is that not only do veterinary professionals have to come together as part of a veterinary team, they must increasingly function as members of a multidisciplinary community that delivers One Health solutions. How then should society recognise those members of the several professions and disciplines that might be represented in the task groups and how does one assure the qualifications of those competent to act in a One Health setting? The answer is yet to be defined but, if we are to ensure the sustainability of the One Health professional paradigm, we must be prepared to learn the lessons from accreditation, specialisation and recognition as they have evolved within and between disciplines at national and international levels of resolution.

Keywords: accreditation, international, One Health, harmonisation

AT1.06 – BIOSECURITY IN ANIMAL PRODUCTION AND VETERINARY MEDICINE

Jeroen Dewulf
Ghent University, Merelbeke/BELGIUM

No abstract available.

AT1.07 - REDUCING ANTIMICROBIAL USE IN ANIMALS WITHOUT JEOPARDIZING HEALTH AND PRODUCTION

Jeroen Dewulf
Ghent University, Merelbeke/BELGIUM

Abstract: Antimicrobial resistance (AMR) is seen as one of the world’s largest health threats. Antimicrobial usage (AMU) is the main influencing factor in the development and spread of AMR (Chantziaras et al., 2014). Potential intervention factors that may help in the reduction of the need for AMU in pig production were studied in cross-sectional and intervention studies in Belgium and other EU countries. Improvement in the level of biosecurity was perceived to be the most promising alternative to AMU by experts in porcine health management, followed by optimizations in herd management (Postma et al., 2015). Large differences, mainly within and also between countries, were observed regarding the level of AMU and biosecurity. In a cross-sectional study (n= 227) performed in Belgium, France, Germany and Sweden, AMU was highest in Germany and lowest in Sweden (Sjölund et al., 2016). The level of (external) biosecurity (using Biocheck.UGen™) was found to positively associate with the number of weaned piglets per sow per year and a lower AMU (Postma et al., 2016a; Postma et al., 2016b). Management factors such as an older weaning age and a longer farrowing rhythm were also associated with a lower AMU (Postma et al., 2016b). “Top” farmers who combined below average AMU and above national average technical performances were characterized by higher internal biosecurity and were generally located in a more favorable environment (Collineau et al., 2017a). A Belgian intervention study (n= 61) showed that a 52% reduction in AMU from birth till slaughter for finisher pigs was possible by coaching farmers in herd management, biosecurity and antimicrobial stewardship (Postma et al., 2017). All of this with positive effects on production parameters; +1.1 weaned piglets per sow per year, +7.7g daily weight gain finishers and -0.6% mortality finishers. Furthermore, the interventions were economically beneficial with an average net benefit of € 2.67 per finisher/year based on the costs for implementation of the interventions and (positive) benefits from improved productivity and lower AMU costs (Royo-Gimeno C. and Postma M. et al., 2016). Similarly a four EU country intervention study (n= 70) showed the same positive effects (Collineau et al., 2017b). The holistic and herd specific approach, with a focus on biosecurity and herd management, turned out the be the key success factor in antimicrobial reduction. This “Check, Improve and Reduce” approach might also prove successful in other countries around the world.

Keywords: antimicrobial use, biosecurity, production, Antimicrobial resistance

AT1 Veterinary Education

Monday, May 7, 2018
13:30 – 16:00

AT1.08 - BETTER VETERINARY EDUCATION IN PRACTICE

Rosanne Taylor
School Of Veterinary Science, University of Sydney, Sydney/NSW/AUSTRALIA

Abstract: What is happening to veterinary education? The pace of change in veterinary education is accelerating. Society needs veterinarians who are equipped for an unpredictable professional and planetary future. Traditional curricula and teaching methods are being replaced by education approaches that engage and meet the needs of individual learners, with a clear focus on students’ achievement of the required education outcomes. This session will explore insights into factors that influence learning, consider new and emerging approaches to educating veterinarians, and reflect on what these changes may mean for the many veterinarians who are involved in educating students in clinical settings, university or private practice. What will the veterinarian of the future be able to do? The knowledge, skills and capabilities of entry-level veterinarians have been defined and reviewed recently
by leading veterinary accreditation, registration and education bodies (e.g. Day one Skills of RCVS, NAVMEC, and OIE). These collective, international efforts at signposting what is required for future veterinarians are profoundly influencing curriculum redesign, driving a shift towards competency-based education (1). Veterinary schools use these statements of graduate competencies as a framework to map their curricula. Curriculum mapping provides a scaffold for ensuring achievement of the goals of a program. Veterinary educators use these maps to ensure that all students develop and demonstrate all the essential learning outcomes.

Recently, an expert group has developed Entrustable Professional Activities (EPA), which distil core elements for veterinary programs into clear statements that guide student learning and assessment. This change in education design is profound: from teacher-controlled content delivery to a curriculum centred on student engagement in learning. Ultimately, it is what the student does to learn that makes the difference in the quality of their education outcomes. In this session, we will explore veterinary student learning and its relationship to graduate quality. We will delve into some theory of learning; behaviourist, cognitivist and constructivist; consider deep and surface approaches to learning; look at why the learner mind-set matters; and how emotion, and the degree of safety students feel influence their willingness to extend themselves, to move into the proximal zone of development where learning is most intense. Critical components of student learning occur in simulated and real veterinary practice settings. The learning context, its authenticity and capacity to engage students, has a profound impact on learning. We will look at some widely adopted simulations, including clinical skills laboratories and problem and case-oriented learning sessions and at the anticipated growth of virtual reality, haptic and visualisation innovations. One of the most crucial and overlooked factors in learning is feedback (2). Too often this “Super power” for professional development is neglected. Students do best when they receive precise, specific, just in time feedback on their performance, particularly in the clinic. We will finish by looking at how to make the most of this “Super power” to inspire veterinary learning. Bok and Jaarsma (2017) Competency-based education. Veterinary Medical Education, p24-35, Eds Hodgson, Pelzer Hattie and Timperley (2007) The power of feedback. Review of Educational Research 77:81-112

**Keyword:** veterinary curriculum, theories of learning, clinical learning simulations, feedback

**AT1.09 - EDUCATING FOR THE “WHOLE” VETERINARIAN**

Rosanne Taylor
School Of Veterinary Science, University of Sydney, Sydney/NSW/AUSTRALIA

**Abstract:** A “how to guide” for graduating better veterinarians Society makes a grand bargain with the professions, in according them autonomy to practice. The public places their trust in veterinarians, and expects veterinarians will conscientiously act in the best interests of the patient, client, practice, themselves and society. Trusting that veterinarians will practice with virtue, integrity, autonomy, responsibility, reliability, honesty, expertise, and continuously improve their practice (1). We are all in furious agreement that veterinarians must act with these high standards of professionalism, but planning the development of these behaviours and attitudes is challenging for curriculum designers. Much of the real learning about what it means to be a professional arises, unplanned and unmonitored, from students’ experiences in clinical settings, in university hospitals and in private practice. In this session we will review some of the most crucial “soft skills” and ask what do future veterinary professionals require? Putting aside technical and knowledge domains of veterinary curricula, we will look at some aspects currently considered vital to successful veterinary practice (in all its forms), that contribute to “professionalism”. These include teamwork, leadership, communication, life-long learning, reflective practice, evidence based medicine, animal welfare, veterinary ethics, diversity and inclusivity, community service, wellness and resilience. These do not necessarily lend themselves to traditional teaching methods, so a range of experiential learning designs has emerged. We will look at the growing body of evidence for the most effective approaches to developing and assessing these professional attributes in veterinary medicine. Clinical settings, in practice and in university hospitals, have the most powerful impact on veterinary students learning about aspects of professionalism. Whilst classroom and simulation activities can develop students’ knowledge and confidence in analysing and responding to problems in professionally appropriate ways, research has shown that students’ attitudes are shaped through their own responses. Too often, what we transmit is unrecognised, or hidden, and it may be at odds with what is espoused. Negative experiences can contribute to veterinary students’ diminished commitment to animal welfare, reduced resilience and self-care, decline in empathy and increased tolerance to unethical behaviour. We will look at how to identify this hidden curriculum in practice-based learning and consider how it can impact the acquisition and refinement of professional attributes in veterinary trainees. Strategies for developing an intended, explicit curriculum in veterinary professionalism will be discussed. Beauchamp and Childress (2013) Principles of Biomedical Ethics, 7th Edition Mossop (2017) The hidden curriculum. Veterinary Medical Education, p 525-539 Eds Hodgson, Pelzer

**Keyword:** veterinary professionalism, “soft skills”, practice-based learning, hidden curriculum

**AT1.10 - AMR CURRENT RESEARCH**

Stuart Reid
Royal Veterinary College. University of London, Hertfordshire/UNITED KINGDOM

No abstract available.
**AT1 Comparative Medicine**

**Tuesday, May 8, 2018**

**09:00 – 12:30**

**AT1.11 - TEACHING OLD DOGS NEW TRICKS: USING THE DOG AS A MODEL FOR HUMAN AGING**

Audrey Ruple
Comparative Pathobiology, Purdue University, West Lafayette/UNITED STATES OF AMERICA

**Abstract:** The single greatest risk factor for nearly every major cause of mortality in humans in developed nations is age. We know from previous work in animal model systems that a diverse array of genetic and environmental factors influence aging through evolutionarily conserved pathways, but we do not yet understand how these factors explain age-related variation in natural populations. Studies in elderly humans, especially those that are particularly long-lived, reveal associations between some genetic and environmental factors but tell us little about the mechanisms that allowed those individuals to age well. In order to bridge this knowledge gap, we must better comprehend how an individual’s aging trajectory is shaped by both genetic and environmental factors. Companion dogs are a good candidate model for exploring adding mechanisms in humans because they vary tremendously, not only in size, shape, and behavior, but also in how long they live and their causes of death. In addition, they share our environment, our disease burden, and we have a sophisticated health care system for companion dogs which we can utilize to discover not just when a dog dies, but also why it dies. Through utilization of this model system we can better understand what factors influence healthy aging in both dogs and humans and how to increase healthspan and lifespan in both species.

**Keywords:** Comparative medicine, dog, healthspan, aging

**AT1.12 - USING CANINE SPONTANEOUS TUMOR MODELS TO UNDERSTAND THE CAUSES OF HUMAN CANCERS**

Audrey Ruple
Comparative Pathobiology, Purdue University, West Lafayette/UNITED STATES OF AMERICA

**Abstract:** The term cancer describes a collection of a broad group of more than a hundred different diseases all of which arise from mutated cells within the body. These diseases are the second leading cause of human deaths worldwide and the most common cause of death in developed countries. As our population ages, it is projected that the incidence of cancers will more than double by the year 2030. Determining the cause of cancers is important in order to prevent their occurrence, but the true etiology of most cancers is difficult to discern as they are typically caused by a combination of both genetic and environmental components. Animal models, primarily genetically engineered mice, have been used historically in research aimed at discovering the etiology of cancers, but these models have severe limitations as a translational model of human cancers. However, cancer is also the leading cause of mortality in companion dogs and the canine spontaneous tumor model may be a better model for use in human cancer epidemiology research than other animal models or even human populations. This is due to the fact that dogs spontaneously produce many different types of tumors that are molecularly indistinguishable from human tumors. Canine DNA shares a large amount of ancestral sequence with human DNA, but dogs have greater genetic homogeneity – even across breeds – than do humans, which simplifies disease mapping at the genomic level. Dogs live in the same environments as humans, so they share many similar exposures to environmental factors that may contribute to the development of cancer. Tumors in dogs progress at a rapid rate as compared to humans and many tumor types that are rare in humans occur frequently in dogs. These facts, when considered along with the existence of an accelerated aging process in dog, supports how use of the canine spontaneous tumor model allows us to gain a greater understanding of genetic and environmental contributions to human disease and do so at a rapid pace. By determining these etiologies we will be able to impact the health of both species.

**Keywords:** Comparative medicine, Companion dog, Disease etiology, Cancer

**AT1.13 - DOGS: THE CANCER PATIENT’S BEST FRIEND**

Audrey Ruple
Comparative Pathobiology, Purdue University, West Lafayette/UNITED STATES OF AMERICA

**Abstract:** The field of comparative oncology has emerged as a promising means to help cure cancer in both pets and people. Historically, animal models utilized for human cancer research were rodent species in which researchers created cancer rather than utilizing naturally occurring tumors. However, the induced-tumor murine model does not reflect the complexity of cancers that occur naturally as these tumors typically grow their own vasculature, adapt to immune responses, and can vary in genetic composition from one cell to the next. In addition, mice and humans share less than 70% genetic similarity which can impact the accuracy of translational treatment response. Dogs offer a better model for cancer treatment research for several reasons including: greater genetic similarity to humans, similar genetic mutations that lead to cancer initiation, spontaneous development of tumors that are molecularly indistinguishable from human tumors, similar or increased exposures to environmental factors that can influence cancer development, a larger body size as compared to mice, and access to sophisticated, high-quality healthcare that is increasingly similar to human healthcare. In addition, dog cancers respond similarly to human cancers to many different treatment options that are now available. Thus, new cancer treatments shown to be effective in canine cancers can often be predictive of treatment response in human cancer patients. To this end, a network of academic comparative oncology centers has been created in the United States in order to increase our ability to quickly assess novel cancer therapies through use of clinical trials conducted in companion dogs. Product of this work has been directly integrated into the design of human Phase I and Phase II clinical trials. Results of some of these studies and their significance to both dog and human health will be discussed.

**Keywords:** Comparative medicine, Cancer, Clinical trials, Companion dog
AT1 Evidence Based Medicine, Practice Based Research
Tuesday, May 8, 2018
12:30 – 17:00

AT1.14 - WELFARE IMPACTS OF COMMON DISORDERS IN DOGS: USING VETCOMPASS™ PRIMARY-CARE VET CLINICAL DATA TO SCORE AND PRIORITIZE

Dan O'Neill
Veterinary Epidemiology, Economics And Public Health, Royal Veterinary College, London/UNITED KINGDOM

Abstract: How do we know which disorders really have the greatest welfare impact on dogs? There are currently no evidence-based strategies to quantify and compare the overall welfare burdens across the breadth of disorders that affect dogs. But this type of information is critically important to many aspects of decision-making in dogs. Vets in practice are faced daily with decision-making in the face of limited financial resource from owners of sick pets. Without such information on welfare impacts, how do we prioritise which disorders to treat (or to euthanase) and how far to go with treatment either clinically or financially. For veterinary organisations and kennel/breed clubs who are contemplating the ongoing breeding value of pre-existing health schemes (e.g. hip dysplasia testing) or the introduction of newer schemes (e.g. brachycephalic breed health testing), a reliable method of comparing welfare impacts across disorders is essential. Population-based assessment of veterinary clinical records offers a quantitative basis for objective scoring of the welfare impact of canine disorders. The VetCompass™ Programme holds anonymised electronic health record data from millions of dogs attending primary-care clinics in the UK. These data are now being used to apply a data-driven strategy to assess and compare welfare impact in common breed-associated disorders of dogs that can meet the needs of veterinarians, breeders and owners with an interest in dog welfare. The welfare components from individual disorders have been defined as three basic metrics: prevalence, severity and duration. Data on these three metrics can be extracted from veterinary clinical records and added together to give a VetCompass™ Welfare Impact score. This score is directly comparable between disorders to enable objective, transparent comparison of their welfare impacts. The initial development phase of the system included 8 disorders: dental disease, overweight/obesity, anal sac disease, otitis externa, dermatitis, osteoarthritis, conjunctivitis and lipoma. Of these 8 disorders, osteoarthritis, otitis externa and dermatitis demonstrated the highest overall welfare impact scores. Prevalence estimates were highest for dental disorder, overweight/obese status and anal sac disorder. The highest duration scores were recorded for dental disorder, osteoarthritis, and overweight/obesity. After applying equal weighting to the prevalence, severity and duration, the combination scores highlighted osteoarthritis as a priority based on relatively high severity, duration and a high association with decisions to euthanase. Dental disorder emerged as especially prevalent, chronic and perhaps underestimated in severity by owners. Several breeds were over-represented for each disorder suggesting the usefulness of the system not only to prioritise disorder welfare overall in dogs overall also within individual breeds where the prioritises ranking may be quite different. This presentation reports proof-of-concept for a standardised methodology for welfare assessment at a population-level across a spectrum of canine conditions using VetCompass™ data. These results can assist with evidence-based prioritisation of welfare impact and assist clinicians to improve the quality of their clinical care and advice. These methods also show the value of veterinary first-opinion clinical data as a research resource that can answer questions that have previously been impossible to resolve.

Keyword: VetCompass, welfare, practice-based, EBVM, evidence

AT1.15 - DYSTOCIA IN BITCHES ATTENDING EMERGENCY-CARE VETERINARY PRACTICES IN THE UK: THE BIRTH OF NEW VETCOMPASS™ CLINICAL KNOWLEDGE

Dan O'Neill
Veterinary Epidemiology, Economics And Public Health, Royal Veterinary College, London/UNITED KINGDOM

Abstract: Dystocia is defined as a difficult birth or the inability to expel the foetus through the birth canal without assistance. Veterinary assistance has been estimated to occur in 5% of all parturitions in domestic dogs. Dystocia can represent a major welfare issue for certain breeds and carries an estimated mortality of over 20% for puppies and of 1% for dams. Improved understanding on dystocia occurrence in the general population of bitches could help veterinary surgeons to improve breeding advice and clinical management for this disorder. However, there are very few studies that report on dystocia in first opinion veterinary caseloads. Given that dystocia in dogs is often an emergency veterinary presentation, first opinion emergency-care veterinary caseloads offer a rich source of clinical case material for epidemiological research on canine dystocia. This presentation discusses the results from practice-based research on a VetCompass™ database of electronic patient records from Vets Now first opinion emergency-care veterinary practices that cover over 1,000 primary-care practices in the UK. There were 701 dystocia cases identified from 18,758 entire female dogs attending 50 Vets Now clinics across the UK. The overall dystocia prevalence in entire bitches was 3.7%. Breeds with the highest prevalence included French Bulldog (20.6%), Boston Terrier (18.8%), Pug (14.5%), and Chihuahua (14.2%). The most common recorded causes of dystocia were fetal malposition (34.6%), fetal maternal disproportion (30.8%). Diagnostic imaging was performed on 27.3% bitches, with 16.1% having radiography and 13.1% having ultrasonography. Oxytocin was administered to 54.2% dystocic bitches. The median oxytocin quantity given at first administration was 5.0 IU/dog and the median oxytocin dose (IU/kg) at first administration was 0.36 IU/kg. Calcium gluconate 10% was administered to 11.7% bitches; with 97.6% of these also receiving oxytocin therapy. The median total litter size was 4 puppies. The median number of puppies born alive was 3 and the median number of puppies born dead was 1. The median number of puppies alive at discharge from emergency-care was 3. The median total litter size did not differ between primiparous and multiparous bitches. Twelve of 701 dystocia cases (1.7%) died before discharge. The proportion of dystocia cases that received caesarean section was 48.6%. Of these surgeries, 31.1% also included an ovariohysterectomy procedure. None of the CS surgeries were recorded as elective. Formal reporting to the KC was recorded in just 1.3% of caesarean section cases. Breeds with the highest
disorders such as corneal ulceration, upper respiratory disorder predilections of each breed. And studies of key French Bulldogs, Pugs and Bulldogs reveal the unique and types over time. Studies of the common disorders o date from the VetCompass™ database in the UK has revealed brachycephalic clinical records as a research resource has progressed recent years, the application of first opinion veterinary and disorder prevalence in these breeds. Thankfully, in has been the deficiency health and welfare. However, a limiting factor to progress shared goal of everyone who cares about dogs and their Reducing and eliminating these health problems is a not be related to screw malformations, lordosis and kyphosis which may. Inability to give birth naturally (requiring Caesarean Some of these problems include: Anatomical defects of breeds including French Bulldogs, Pugs and Bulldogs. problems in a substantial proportion of brachycephalic muzzles) has uninte face shape in brachycephalic dogs (dogs with short brachycephalic dog breeds. Selecting for a flattened Nowhere is this question in more focus right now than for conclusion led to associated health differences even between these apparently similar brachycephalic breeds. Practice-based research is entering a new era and is now revolutionising how we approach the generation and application of ‘evidence based veterinary medicine’. 

**Keyword:** VetCompass, welfare, practice-based, EBVM, flat-faced dogs

**SC1 Short Communications 1**

**Sunday, May 6, 2018**

**17:30 – 18:30**

**SC1.01 - DETECTION OF EXPERIMENTAL CARTILAGE DAMAGE WITH ACOUSTIC EMISSIONS TECHNIQUE: AN IN VITRO EQUINE STUDY**

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1Research Unit Of Medical Imaging, Physics And Technology, University of Oulu, Oulu/FINLAND, 2Department Of Anatomy, Medical Research Center Oulu, University of Oulu, Oulu/FINLAND

**Background:** In horses, osteoarthritis (OA) mostly affects metacarpophalangeal and metatarsophalangeal ( fetlock) joints. The current modalities used for the diagnostic of equine limb disorders lack the ability to detect early OA. Here, we propose a new alternative approach to assess experimental cartilage damage in the fetlock joint using Acoustic Emissions (AE).

**Methods:** Distal limbs from Finn horses (n=12) were collected and fitted in a custom-made frame allowing the fetlock joint bending (Figure 1). The joint of eight limbs was opened and cartilage surface was progressively damaged mechanically three times using sand paper (P60) to mimic early, mild and chronic OA condition. The remaining four limbs were opened and closed without any mechanical procedure, serving as control. Prior to cartilage alteration, synovial fluid was aspirated, mixed with phosphate buffered saline solution, and then reinfected before suturing for constant joint lubrication. For each simulated OA severity, a force was applied to the frame and then released to mimic the joint flexion and extension. Flexion-extension was performed 20 times while simultaneously acquiring AE signals with air microphones (Audio-Technica, AT899).

**Figure 1:** The distal limb of horse fitted in a custom design frame that can simulate the flexion and extension movement of the fetlock joint with the help of attached rails and elastic straps. (a) Simulated flexion movement with applied force and (b) simulated extension movement with release of force.
Results: A strong association was found between the joint condition and the power of the AE signals (Figure 2) analyzed in the 1500-6000Hz range. Both forelimb and hindlimb joints followed a similar trend for an increased cartilage damage. The results of independent t-test showed statistically significant difference between each joint conditions progressively (p<0.001). The control joints did not show any changes in trend during the experiment.

Conclusion: The AE technique presented here was able to differentiate the severity of the fetlock joint cartilage damage. The consistent results for each simulated condition suggest the strong potential of this method in OA diagnostics, with a possibility of early detection of the condition. Our future studies will assess the performance of this method in vivo.

Keywords: equine, osteoarthritic, acoustic emissions, fetlock joint, cartilage

SC1.02 -  EX VIVO SENSITIVITIY AND ROBUSTNESS OF A NOVEL HOME-SCREENING TEST FOR FELINE HEMATURIA

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Background: Detecting hematuria is a challenge for cat owners. A novel screening test for cats with urinary tract disorders associated with hematuria is in its last development stages. The test consists in small white granules placed on the litter. Via an enzymatic reaction, the granules change in color when exposed to hemoglobin. We reported elsewhere (Proceedings ACVP annual meeting, New Orleans 2016) that the lowest limit of repeatable hematuria detection of one of its prototypes was 160 red blood cells (RBC) per µL (corresponding to 3-8 RBC/high-power field at the microscopic examination of the sediment of 1 mL of urine). However, the prototype needed refinements due to color stability. The goal of this study is to determine the lower limit of hematuria detection and color stability of the final screening product, and to verify its robustness in altered urine composition.

Methods: First, the product was tested in quadruplicate by pouring 50 µL of pooled feline urine (1.047 g/mL specific gravity, hereafter SG) fortified ex vivo with feline RBC at 13 concentrations ranging between 0 and 640000 RBC/µL. Granule readings were performed at 3 and 30 minutes, and at 24 and 48h after exposure to fortified urine. In parallel, the urine samples were centrifuged and subjected to additional blood detections, including dipstick of the supernatant and microscopy of the sediment. This protocol was repeated on 3 other pools of urine (respectively 1.037, 1.026, and 1.053 g/µL). Secondly, 12 healthy male and female cats were randomly distributed in three 4-by-4 latin squares with distinct treatment sequences (2 cats/sex/square), in which they received 4 distinct fluid therapies that caused transient polyuria with differential effects on urinary composition. Urine was collected individually, tested for pH, SG, and protein concentration (Prot), and then fortified with RBC identically to the first experiment. Color intensity of the chromogenic reaction was scored with an ordinal scale from 0 (none) to 3+ (strong), and statistically analyzed with a generalized linear mixed model for ordinal repeated measures, with urine RBC concentration, specific gravity, pH, protein concentration, sex, type of fluid, and period as fixed factors, and cat within sequence as a random factor.

Results: We recorded microhematuria at concentrations ≤ 1965 RBC/µL. In the 1st experiment, the lower limit of repeatable detection ranged between 100 RBC/µL (with urine at 1.026 g/mL SG) and 851 RBC/µL (at 1.053 g/mL). Color intensity slightly decreased by 30 min and remained stable up to 48h. In the 2nd experiment, the intravenous fluids changed the urinary SG, pH and Prot. The limit of detection significantly increased with increasing pH (320 RBC/µL at pH ≥ 8.5; p-value = 0.019) and proteinuria (640 RBC/µL at Prot ≥ 15 mg/dL; p-value = 0.0002). Sex and SG had no significant effects on detection efficiency (p-value > 0.05).

Conclusion: These results show that despite the significant effects of pH and proteinuria, this test still detects microhematuria and shows promise for reliable clinical and household use. The results of a confirmatory clinical trial is the subject of a companion abstract.

Keywords: urinalysis, cats, disease models, Haematuria, screening tests

SC1.03 -  RADIOGRAPHIC QUANTIFICATION OF ELBOW INCONGRUENCE IN LABRADOR AND GOLDEN RETRIEVERS WITH MEDIAL CORONOID DISEASE

Ayman A. Mostafa
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Background: The reported research is innovative and provides a significant contribution to the scientific literature. The study provides the first evidence of quantifying the congruity of elbow joint via calculating the subluxation indices of humeralradial (HR), humeroulnar (HU), and radioulnar (RU) joints on elbow radiographs of Labrador and Golden Retrievers without and with confirmed MCD.

Methods: Extended mediolateral and craniocaudal elbow radiographs of Labrador and Golden Retrievers without and with confirmed MCD were analyzed. The congruity of HR, HU, and RU joints were quantified via calculating the subluxation index of each corresponding joint on the extended mediolateral projection of each elbow. The HR, HU, and RU subluxation indices were calculated by dividing the corresponding HR, HU, and RU distances by the radius of the humeral condyle.
respectively. RU-step was estimated on the same mediolateral projection. Variables were compared between control and diseased groups and level of significance was set at \( P < 0.05 \). Prevalence of other radiographic changes associated with MCD were identified on both radiographic projections.

**Results:** Sixty-six Labrador Retrievers (93 elbows) and 73 Golden Retrievers (113 elbows) met the criteria for inclusion in the control and diseased groups, respectively. The HR, HU, and RU distances and corresponding subluxation indices increased significantly (\( P \leq 0.007 \)) in elbows with confirmed MCD. A significant increase (\( P < 0.0001 \)) in the RU-step was evidenced in diseased elbows compared to controls. Subtrochlear ulnar sclerosis (90.3%) and deformed MCP (85.8%) were the most common radiographic changes identified in elbows with MCD.

**Conclusion:** Elbow incongruence is consistent with MCD in Labrador and Golden Retrievers. Elbow joint with HR, HU, or RU subluxation index greater than 0.15, 0.10, or 0.14, respectively, and RU-step > 1.4mm, is more likely to have elbow incongruence and concomitant MCD. Quantifying elbow incongruence may provide key diagnostic and prognostic criteria for selection of an efficient future treatment plan.

**Keywords:** Quantification, Elbow Incongruence, Labrador and Golden Retrievers, Medial coronoid disease, Radiographic

**SC1.04 - DEVELOPMENT OF NOVEL ANIMAL VACCINES BASED ON REPROGRAMMED MYCOPLASMA PNEUMONIA**

Markus Schmidt\(^1\), Maria Lluch Senar\(^2\)

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**Background:** In 2010 scientists announced the creation of the first bacterial cell controlled by a chemically synthesized genome (Gibson et al. 2010). The “synthetic” cell was mycoplasma, a model organism for synthetic genomics and systems biology (Guell et al. 2009, Kühner et al. 2009, Yus et al. 2009). Some mycoplasma, however, are also pathogens affecting human and farm animals. Traditionally, bacterial vaccines are made from inactivated or attenuated pathogens. In many Mycoplasma species, however, these vaccines don’t work really well, because the inactivated pathogens don’t attach, for example, to the host epithelial cells, thus failing to trigger an appropriate immune reaction.

**Results:** In the EC H2020 funded project MycoSynVac [2015-2020], a European consortium is now working on the first synthetic biology derived animal vaccine. The goal of MycoSynVac is not just a mere attenuated pathogen, but a truly reprogrammed organism that should be able to “inhabit” the host, to attach e.g. to host epithelial cells in the respiratory tract, but then refrain from causing cell damage and inflammatory response because the virulence factors had been removed (Lluch-Senar et al. 2015). (Re)programming this behaviour requires not only a deep understanding of the pathogenic life cycle and its cause on a genetic level (Gourgues et al. 2016), but also reliable bioinformatics models (Kamminga et al. 2017) and precise gene editing tools for Mycoplasma (Tsarmpopoulos et al. 2016, Rideau et al. 2017). (see figure 1)

**Conclusion:** The designed vaccines will be based on a standardized “chassis” that can hold several different types of pathogenic epitopes, so development of the next vaccine[s] will be much easier and faster. Making it easier to engineer novel vaccines will also allow for a systematic replacement of antibiotics in agriculture. Vaccines as tools to reduce antimicrobial resistance (AMR) have historically been under-recognized in these discussions, even though their effectiveness in reducing disease and AMR is well documented (Jansen et al. 2018).

Western Blotting revealed the presence of the exosome marker Hsp70 and the absence of CytC. Plasma-derived exosomes did not show detectable pathological protein, whereas PrPSc in CSF exosomes was successfully amplified in most samples from clinical scrapie sheep and one preclinical animal. Mice inoculated with plasma exosomes isolated from scrapie infected sheep did not show clinical signs of the disease (>600 dpi). Finally, in circulating blood plasma, significant increase was found for miR-21-5p and miR-342-3p, and only miR-21-5p was significantly increased in plasma exosomes from scrapie sheep. Bioassay and miRNA profiling of CSF exomes are still ongoing.

Conclusion: This is the first description of circulating and exosomal miRNA alterations in TSE naturally affected animals and shows the potential of these extracellular vesicles as a source of biomarkers of prion diseases. Although PrPSc detection in exosomes would not be a reliable method for early diagnosis of the disease, the detection of the prion protein in CSF exosomes could indicate that these vesicles are involved in prion propagation throughout the organism, which would contribute to a better understanding of TSEs pathogenesis.

SC5 Short Communications 5
Monday, May 7, 2018
17:00 – 18:00

SC5.01 - VETERINARY STUDENT'S PROFESSIONAL ORIENTATION AND EXPECTATIONS AT THE UNAM, MEXICO
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Background: A survey was done to students from 4th semester in the Veterinary and Zootecnoics School, FMVZ, UNAM from the years 1992-2016, in order to find out their reasons and preferences to study veterinary, with a total of 1619 students (53 percent per semester). 2046 answers were obtained about their reasons to study veterinary and 3216 answers to the working area or animal specie of their choice. The feminine percentage of the population in the school has increased from 1992 to 2016 from a 42% to 68% (semestral increase of β=1) which reflected in the study group which was from 50% to 64.4% (β=0.7).

Methods: About their motivation to study the career, three groups were formed: Childhood: family environment, television influence (DAN Syndrome: Discovery Channel, Animal Planet, National Geographic) and wanting to learn more about animals Highschool: Medicine, Animal production, working market Pre-university: another career, vocational orientation

Results: From these three groups, the first one, childhood family influence, was the most common (from 56% of each semester average, 20.8% family environment and 21.4% television) followed by Highschool (32%), while the Pre-university was the least important (13.5%). Regarding preferences by species, 24% were small species, 20% bovine, 20% animal production, 17.3% wildlife and 13.1% engineering.
horses. The areas of professional preference, groups were created of clinic and production, separating those who wanted to work with wildlife in zoos or in the wild. The average preference was the clinic area with 37%, production with 45% and wildlife with 17%. Trends for each semester were β=0.53 for clinic; β = -0.72 for production and β=0.19 for wildlife.

Conclusion: As conclusions, we establish the importance of the family environment (including television) in the early choice. There is more knowledge of the clinical and medical areas, because of being an urban student population, as well as the increase in the feminine population and the television influence, with special interest in wildlife.

Keywords: student orientation, student preferences, perspectives, future expectations

SC5.02 - APPLICATION OF INTERVENTIONAL RADIOLOGY: TRAINING IN VETERINARY SCIENCE

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1Animal Pathology, University of Zaragoza, Zaragoza/SPAIN, Interventional Radiology, University Clinical Hospital (Lozano Blesa)-GITMI, Zaragoza/SPAIN, 2Pediatrics, Radiology And Physical Medicine, University of Zaragoza-GITMI, Zaragoza/SPAIN

Background: Interventional Radiology procedures in humans is well known and it’s actually evolving to develop new minimal invasive techniques. The main objective of interventional radiology is to use minimal invasive procedures to treat pathologies with less surgical complications and a faster recovery in patients. Veterinary Science can take advantage of some of these techniques and adapt them to the animals, such as valvuloplasty, balloon angioplasty, vascular recanalization, stenting, embolization procedures for the treatment of vascular malformations and tumors. These techniques require specialized equipment with experienced personnel to perform successful procedures. Surgeons not only have to be able to carry out the basic techniques, such as Seldinger’s vascular access, but also more challenging ones. The objective of our study is to describe how our minimal invasive techniques research group has help applied interventional radiology technique in animals, and also how veterinarians can accomplish a competent training.

Methods: In the last 10 years our minimally invasive technique research group (GITMI) has been teaching a Master’s degree to medicine doctors and veterinarians. That consisted of 2 parts; a theoretical presented on-line and a practical that was performed in a laboratory with porcine models. Practical lessons were performed by teams of 2-3 students, and an experienced professor lasting a total of 16 days. During hands-on sessions, students can use a wide collection of materials (introducers, guide-wires, catheters, balloon catheters, stents, vascular closure devices, different embolization agents, etc.). The procedures that students perform were adapted to specific clinical pathologies. Training included vascular access, vascular closure devices deployment, central venous access and venous port implantation, vascular navigation, embolization (coils, particles, glue), inferior vena cava filters deployment, thrombolysis, thorombectomy, tumor ablation, nephrostomy, vascular and non-vascular stenting, balloon dilation and gastrostomy. At the end of the course the students filled a satisfaction questionnaire.

Results: The results of the questionnaire were that more than 30% of the students said that theoretical lessons level was high or very high. Besides, the 60% said that practical lessons level was high and 25% said that it was very high. In relation to the specialization level, 25% of them said that it was normal, 60% high and 15% very high. More than 70% of the students evaluated that materials used during practical lessons were large according or very large according. Moreover, the 75% said that usefulness of training was very useful and applicable to daily clinic.

Conclusion: Interventional radiology is a discipline that is becoming the future of surgical procedures, but it requires a very specialized training. The combination of theoretical and practical lessons is essential. Practical lessons with small groups, and an adequate specialization level with wide variety of materials are necessary to achieve a competent training.

Keywords: Education, Interventional radiology, Veterinary training

SC5.03 - THE STUDY OF MIRROR SELF-RECOGNITION (MSR) IN WILDLIFE

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Background: Animal cognition provides some evidence for self-recognition, which is described as the ability to recognize oneself as an individual separate from the environment and other individuals. The mirror self-recognition (MSR) or mark test is a behavioral technique to determine whether an animal have the ability of self-recognition or self-awareness in front of the mirror. It also describes the capability for an animal to be aware of and make judgments about its new environment. Thus, the objectives of this study are to measure and to compare the ability of wild and captive wildlife in mirror self-recognition.

Methods: Wild animals from the Royal Belum Rainforest Malaysia were identified based on the animal trails and salt lick grounds. Acrylic mirrors with wood frame (200 x 250cm) were located near to animal trails. Camera traps (Bushnell, UK) with motion-detection infrared sensor are placed near the animal trails or hiding spot. For captive wildlife, animals such as Malayan sun bear (Helarctos malayanus) and chimpanzee (Pan troglodytes) were selected from Zoo Negara Malaysia. The captive animals were also marked using odorless and non-toxic white paint on its forehead. An acrylic mirror with wood frame (200 x 250cm) and a video camera were placed near the cage. The behavioral data were analyzed using ethogram and classified through four stages of MSR: social responses, physical inspection, repetitive mirror-testing behavior and realization of seeing themselves.

Results: showed that wild animals such as barking deer (Muntiacus muntjak), Malayan tiger (Panthera tigris) and
long-tailed macaque (Macaca fascicularis) increased their physical inspection (e.g inspecting the reflected image) and repetitive mirror-testing behavior (e.g rhythmic head and leg movement). This would suggest that the ability to use a mirror is most likely related to learning process and cognitive evolution in wild animals. However, the sun bear’s behaviors were inconsistent and did not clearly undergo four stages of MSR. This result suggests that when keeping Malayan sun bear in captivity, it may promote communication and familiarity between conspecific. Interestingly, chimp has positive social response (e.g manipulating lips) and physical inspection (e.g using hand to inspect part of the face) when they facing a mirror. However, both animals did not show any sign towards the mark due to lost of interest in the mark and realization that the mark is inconsequential.

Conclusion: Overall, the results suggest that the capacity for MSR is the beginning of a developmental process of self-awareness and mental state attribution. In addition, our findings show that self-recognition may be based on different complex neurological and level of encephalization in animals. Thus, research on self-recognition in animals will have profound implications in understanding the cognitive ability of an animal as an effort to help animals, such as enhanced management, design of captive individuals’ enclosures and exhibits, and in programs to re-establish populations of endangered or threatened species.

Keywords: mirror self-recognition (MSR), self-awareness, wildlife, Royal Belum Rainforest, Zoo

SC5.04 - IMPROVEMENT OF STUDENTS’ PERCEPTION OF VETERINARY PUBLIC HEALTH DELIVERY FOLLOWING CURRICULUM CHANGES

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School Of Veterinary Medicine And Science, University of Nottingham, Loughborough/UNITED KINGDOM

Background: The core Veterinary Public Health (VPH) module (year four) at the School of Veterinary Medicine and Science (SVMS), University of Nottingham has consistently received poor students’ reviews. In contrast, the VPH clinical rotation (year 5) is perceived as a valuable and enjoyable learning experience. UK veterinary students’ negative perceptions on VPH are associated with the misconception that the module is relevant only to graduates interested in working in official veterinary work in slaughterhouses. However the structure of the module and how it is delivered may play a role on how VPH is perceived. At SVMS, most of the modules are organised as blocks, while the VPH module was delivered only one afternoon a week two semesters. We proposed, amongst other changes, to turn core VPH into a block module aiming to improve students’ experience and understanding of the subject.

Methods: A school-level whole curriculum review on 2015 provided an opportunity to re-examine the delivery of VPH. The format of the module was changed from a ‘long’ module in year four, to a 2-week ‘block’ module in year three. The learning objectives (LOs) of the original module (half days once a week, for 24 weeks) were reallocated to this new module. When LOs were not allocated in year 3, they were embedded in the relevant system modules in year 4. Students’ views on the teaching and the module were gathered through the online survey platform Blue Castle. For both, responses to the Students’ Evaluation of Teaching (SET) and the Students’ Evaluation of Module (SEM) students’ were categorised using a Likert scale. Additionally, free-text comments boxes allowed us to gather further students’ views. SEM included three questions on the lecturers’ approach to teaching (lecturer is: good at explaining things, approachable and conveys enthusiasm for the subject) and two on the delivery of the sessions (sessions are: well-structured, and encourage me to study). SET included five questions (objectives of the module were made clear/available to students, teaching methods used in the module help students to learn, the method of assessment (exam, coursework, practical, etc) allows students to demonstrate what they have learned on the module and on how appropriate the level and the workload on the module was).

Results: With the new delivery of the module, SEM and SET scores provided by students improved in all the assessed areas. Qualitative data, obtained by analysing open comments boxes allowed us to gather further students’ views. SEM included three questions on the lecturers’ approach to teaching (lecturer is: good at explaining things, approachable and conveys enthusiasm for the subject) and two on the delivery of the sessions (sessions are: well-structured, and encourage me to study). SET included five questions (objectives of the module were made clear/available to students, teaching methods used in the module help students to learn, the method of assessment (exam, coursework, practical, etc) allows students to demonstrate what they have learned on the module and on how appropriate the level and the workload on the module was).

Conclusion: Positive students’ perceptions were most likely associated with students being exposed to a module running in a format similar to those in their previous academic years, allowing students to focus during the whole block module in the subject delivered. An additional week of teaching will be included for next academic year, which aims to facilitate to students the internalisation of their knowledge and understanding of the subject, which should lead to better performance in the assessments.

Keywords: learning objectives, veterinary public health, veterinary curriculum, students’ perceptions, Education

SC5.05 - TUNISIAN CHART ON ETHICS OF ANIMAL EXPERIMENTATION AND THE PLACE OF THE VETERINARIAN

Ouacidi Souliem
National School Of Veterinary Medicine, University of Manouba, Sidi Thabet/TUNISIA

Background: The National Committee of Ethics on Animal Experimentation, designated by the Secretary State for the Ministry of Higher Education and Scientific Research, in 2017, worked on the chart by identifying its vision and mission; and implementing its goals. The charter was approved by the Tunisian Scientific Community in April, 2017. It is being currently evaluated and signed by different ministries, interested in the usage of animals in different fields, such as; agriculture, health, education, environment, culture, etc. The charter was based on – The Tunisian constitution of 27th of January 2014, – International conventions and declarations and a set of noble values, towards animals as sentient being capable of emotion. This chart opens up the path to set a specific regulation in order to move from random experiments to lawful ones.

Methods: The articles of this charter endorse the basic principles of respect for animals as sentient beings and their right to life and insist on the need not to harm their integrity and not to make them endure suffering. This charter aims to enhance the worth of the animal and its
Results: In Tunisia like in developing countries, there are no specific regulations for the qualifications of Veterinarians on Laboratory Animal Medicine (LAM) and Science. In this fact, Veterinarian should be familiar with the biology and clinical characteristics of the species used. A basic research approach is also needed. In practice, LA Veterinarian can be implicated in; how animal are obtained, the provision of adequate care, provision of a suitable environment, respect of animal needs, assurance of an ethical review, application of 3 Rs (replace, reduce, refine)...... A well trained and highly competent LA Veterinarian ensures the right balance between animal welfare and good quality science and promotes a good “culture of care”.

Conclusion: In conclusion, communication and networking about LA Veterinarian are essential in Tunisia and we need an effective synergy between structures like National Veterinary School, competent authority, Tunisian Veterinary Council and NGO (ATSAL: Tunisian Association for LAS), to establish a strategy of an appropriate training and Education program.

SC10 Short Communications 10
Tuesday, May 8, 2018
17.00 – 18.00

SC10.01 - ISOLATION AND IDENTIFICATION OF BACTERIAL FLORA IN CLOACAL CAVITIES OF CAPTIVE FALSE GHARIAL IN PENINSULAR MALAYSIA

Hasliza Abu Hassim, Mohd Qayyum Ab Latip, Tengku Rinalfi Putra Tengku Azizan, Mohd Hezme Mohd Noor, Hafandi Ahmad Department Of Veterinary Preclinical Sciences, Universiti Putra Malaysia, UPM Serdang/MALAYSIA

Background: Bacterial flora of an animal can indicate health and in cases of immunosupresion, the type of bacteria that can be possible pathogens. Bacterial flora of crocodile can be detrimental for the crocodile as well as human health. Bacterial infections are known to be the most common cause of death in farmed crocodiles (Foggin 1992; Hutchzermeyer 1991). We also know that the reptile is an enormous bacterial reservoir because their natural habitat is in areas with severe environment. Salmonella is the common bacteria found in reptiles. Too much bacteria count in a reptile will cause death to the reptile including crocodile. Other than causing death to the crocodile, it can also cause zoonotic disease transmission into humans who take crocodile meat as a source of food. The objective of this study was to isolate and identify bacterial species that normally live in the body of False Gharial through swab sampling of the cloacal cavities. The results can be a preliminary data of the normal flora in captive False Gharial in Peninsular Malaysia.

Methods: Bacterial cultures were done from cloacal swabs collected from ten samples of captive False Gharial in Peninsular Malaysia. 13 species of bacteria were cultured from 42 isolates. Each individual crocodiles yielded 3-5 bacterial species and no crocodile were found to yield a single species.

Results: The most commonly isolated bacteria were Proteus vulgaris and Salmonella sp. and all the bacteria were gram negative. Most of the genera belong to the family Enterobacteriaceae and half of the bacteria isolated were bacteria found in soil.

Conclusion: The data about bacterial flora isolated from cloacal cavities of captive False Gharial in Peninsular Malaysia can be used as a baseline value to get the normal flora of this species by comparing the results with other research on the same species.

Keywords: Tomistoma schlegelii, captive crocodiles, normal flora, reptile diseases, food borne diseases
positive cases compared to the negatives. In dogs with negative TVT cells, parabasal, intermediate, nuclear/anuclear superficial cells were more than those positives.

**Conclusion:** As a result, the male dogs having no lesions could be infected with TVT. Dogs should be examined not only clinically, but also cytologically, to determine whether TVT cells are present. This method can be an easy way to find and treat TVT lesion-free but infected dogs at an early time.

**Keyword:** Male dogs, Exfoliative Cytology, TVT, TVT cell

**SC10.03 - FIELD CASTRATION OF THE DONKEY IN IRELAND – HOW DONKEYS DIFFER!**

Joe Collins
Slade House Farm, The Donkey Sanctuary, Devon/IRELAND

**Background:** Donkeys are not small horses with big ears – there are key differences in anatomy, physiology and behaviour that should guide us in adapting the approach taken with horses. This presentation will highlight significant differences between donkeys and horses and describe why this technique is the author’s chosen method. Donkeys have significantly increased metabolic efficiency – which includes drug metabolism and means more scrotal fat. They behave differently – to handling by us, to the stress of separation from companions and to surgery itself. They are more prone to bleeding – from spermatic and scrotal vessels.

**Methods:** I use general anaesthesia and a closed surgical technique, ideally in a clean grassy field with already familiar donkey companion and minimal flies.

**Medication:** several drugs are given i/v; some are irritant and must be given intravascularly. Based on evidence and the accumulation of experience here follows my dosage regime (of vet products with standard concentrations) for a 200kg donkey. It gives me 15 – 20 minutes to surgically proceed.

- 1000mg phenylbutazone solution separately i/v. Time + 1 minute of surgical anaesthesia: Time zero: a mix of 3ml 5.5ml ketamine solution and 4ml diazepam solution (2 0.5ml butorphanol solution i/v; - depending on vaccination activity and high specificity (Hortin, 2006). This study aimed to determine PMF in the canine OM serum samples at early and late clinical stages by MALDI-TOF MS, supporting the utilization of this technique for rapid canine OM screening.

**Methods:** Nine serum samples (3 early-stage OM, 3 late-stage OM and 3 normal oral health controls) were recruited in the study. The clinical staging of OM was determined according to World Health Organization (WHO) staging scheme (Owen, 1980). PMFs were characterized using Ultraflex III TOF/TOF in a linear positive mode with a mass range of 0 – 5,000 Da. MS spectra were analyzed by Flex Analysis.

**Results:** Distinct fingerprint spectra were observed among early- (3,900–4,000 Da) and late-stage OM (2,600–2,700 Da) and controls (1,800–1,900 and 2,100–2,200 Da) (Fig. 1). Figure 1. Peptide mass fingerprint of the early-stage oral melanoma [OM], the late-stage OM and normal gingiva tissues in range of 1,000 – 5,000 Da
Conclusion: This study proposed the potential utilization of PMF as serum biomarker for rapid screening in the early- and late-stage OM. The results of different sample groups showed specific mass signals and distinct peptide patterns. Since peak patterns of serum peptides might vary in individuals, pool serum samples might be analyzed for representation and classification of OM.

Keywords: canine oral melanoma, clinical stages, peptide mass fingerprint, MALDI-TOF mass spectrometry, serum

SC10.05 – EVIDENCE-BASED MEDICINE WHEN THERE IS NO EVIDENCE: EQUINE OCULAR SERTARIOsis

Shereene D. Williams1, Dinesh Mohite2, Polly Compston3

Background: Aperent migration of *Sertaria* nematodes in equids can result in parasitic infestation of the eye’s anterior chamber, causing lacrimation, photophobia, corneal opacity and blepharospasm. The worm is motile and visible within the eye. In India, where Brooke trains local animal healthcare practitioners, standard treatment is surgical aspiration through the cornea. It is often performed standing, with insufficient anaesthesia and anaesthesia, resulting in an unacceptable welfare risk. However, Brooke has found it difficult to advise an alternative treatment for these cases as there is no recorded medical treatment in the literature. Specialist surgical treatment at a referral facility is not available in these remote localities where equid-owning communities reside. The objective of the study was to develop and test a medical treatment protocol for equine ocular sertariosis as a sustainable low-skill answer to replace the previously highly-skilled surgical answer.

Methods: Initially a full literature review was undertaken. Experts in Europe and India and pharmaceutical manufacturers were identified and contacted. Based on this expert opinion and safety data, a medical protocol of sequential oral ivermectin treatment was designed and implemented in all animals presenting to Brooke-trained animal healthcare practitioners between March and May 2017. Regular check-points were scheduled to review results, and end-points defined to initiate protocol changes.

Results: Previous literature reports contained small case series without uniform treatment conditions, short-term and variable follow-up, surgical removal performed under general anaesthesia (non-acceptable in normal field conditions) or subcutaneous ivermectin (two reports treating total five horses). Nine animals presented during the treatment period with ocular sertariosis. Following 60 days of treatment, in seven cases the worm had become sluggish or immobile, and completely absorbed in two. In one case there was no change in the worm following 24 days treatment: the animal and owner then moved away from the area. One animal had severe additional pathology in the affected eye caused by application of traditional medicine (vermillion). Out of six animals reassessed at 60 days following diagnosis, only one (that had been treated with vermillion) had complete vision loss in the affected eye.

Conclusion: For conditions with low prevalence but potentially high morbidity it may be necessary to trial novel treatments outside of a structured epidemiologically-sound data collection exercise. With every case treated the evidence-base grows, and therefore the protocol evolves. Carefully-collected informed consent is essential as the treatment regimen may change and may not work. Stakeholder buy-in at all levels including animal owners, the local animal healthcare practitioners usually engaged in treating these animals and supervisory NGO staff must be engaged throughout data collection. The study results suggest cautious success following up to seven doses of oral ivermectin: however this prolonged regimen may be difficult to implement in the field. Context-specific recommendations and effective client communication are a key component in treating working equids with ocular sertariosis.

Keywords: evidence-based medicine, sertariosis, ophthalmology, parasitology, working equids

SC10.06 – ISOLATION, CULTURE, AND CHARACTERIZATION OF PRIMARY CANINE SATELLITE CELLS FROM THE GRMD MODEL

Joe N. Komnagyi1, David A. Detwiler2
1Veterinary Integrative Biosciences, Texas AM University, College Station/United States of America, 2Novanovis, LLC, West Lafayette, IN/United States of America

Background: Duchenne muscular dystrophy (DMD) is a debilitating X-linked disease of striated muscle caused by mutations in the DMD gene coding for the dystrophin protein. Most affected boys are treated with prednisone, which provides only palliative relief. Both murine (mdx) and canine (golden retriever; GRMD) models are used in treatment development. Skeletal muscle regeneration occurs through activation of satellite cells. Only minor differences have been found between normal and dystrophic cultures. However, satellite cells have not been characterized at the transcriptional level.

Methods: Biopsies were taken from the vastus lateralis muscle of 2 to 4-month old normal or GRMD dogs (n = 6 each). Samples were digested and cultured in growth media using the preplate method on a series 6 plates for 24 hrs each. For flow cytometry, cells were stained with antibodies to NCAM-1 (5.1H11; DSHB) anti-mouse-APC secondary and anti-canine CD45-FITC (AbD Serotec) and CD34-PE (BD Pharmingen). Cells were differentiated in 2% horse serum in DMEM and then either fixed for immunohistochemistry (IHC) or analyzed for mRNA or imaging at Days 0, 3, 5, and 7. Canine beta-actin, Pax7, MyoD, myogenin, and trophinin was studied by real-time RT-PCR. Data analysis was done by ddCt method (Livak 2001, Schefé 2006). For cell fusion studies, cells were plated in growth media and switched to low serum media at 48 hrs. Hoechst dye was used to label nuclei
and fluorescent images were overlaid with brightfield images to count nuclei.

**Results:** PrePlate Cultures. Normal and GRMD cultures were visually indistinguishable. All genes were elevated in later preplates of both cultures, with GRMD levels generally higher. Pax7 and myogenin were minimally expressed in preplates and then rose. GRMD cultures had low levels of MyoD early and, again, rose, while normal cultures showed proportionally higher levels of MyoD early. Utrophin levels for both started at about half that of the later preplates and then increased. Flow cytometry. Approximately 85% of cultured cells stained strongly for NCAM-1. Separate groups also stained for CD45, the pan hematopoietic marker. Cells staining negatively for CD34 were strongly NCAM-1+. Growth vs. Differentiation. Comparing GRMD to normal, Pax7 expression dropped off between Days 0 and 3 for GRMD, while increasing in normal. Pax7 mRNA decreased in both after Day 3. MyoD was up-regulated in normal cultures but dropped off in GRMD through Day 7. Utrophin mRNA increased similarly for both through Day 7. Myogenin mRNA was strongly up-regulated in normal cultures, while GRMD showed a relatively moderate increase through Day 5, followed by a decrease by Day 7. Fusion Studies. GRMD cultures showed greater capacity to form cell fusions from Day 5-7.

**Conclusion:** Some GRMD transcription factors that normally dampen differentiation were down regulated, likely induced by the constant cell necrosis-regenerative cycle in GRMD muscles. Consistent with increased differentiation, GRMD cultures demonstrated an increased number of fusion events over normal dogs. The advanced differentiation state of GRMD satellite cells could limit success of treatments that rely on correction of analogous dystrophic cells.

**PUBLIC VETERINARY HEALTH TRACK**

**GOHS1 5th WVA Global One Health Summit | Theme - Biosecurity**
**Monday, May 7, 2018 09:00 – 13:00**

**GOHS1.02 – BIOSECURITY IN ANIMAL PRODUCTION AND VETERINARY MEDICINE**

Jeroen Dewulf  
Ghent University, Merelbeke/BELGIUM

**Abstract:** Globally, the way the animal production copes with infectious diseases is changing. The (excessive) use of antimicrobials is under debate and it becomes standard practice to implement thorough biosecurity plans on farms to prevent the entry and spread of pathogenic micro-organisms. Not only in farm animal production, but also in facilities where companion animals are kept, including in veterinary practices and clinics, awareness of the beneficial implications of a good biosecurity plan has raised.

Biosecurity consists on the combination of all measures implemented that reduce the risk of introduction (external biosecurity) and spread (internal biosecurity) of disease agents. Implementing biosecurity requires the adoption of a set of attitudes and behaviors to reduce the risk in all activities involving animal production or animal care. It is based on the prevention of and protection against infectious agents.

Good biosecurity is based on a number of basic principles:
1. Separation of high and low risk animals and environments to avoid disease transmission
2. Reduction of the general infection pressure under a level which allows the natural immunity of the animals to cope with the infections
3. Not every transmission route is equally important and therefore a ranking in measures is required to avoid that emphasis is put on the wrong measures ad more important risk are overlooked
4. Risk is a combination of probability of transmission and frequency of occurrence of transmission routes. Therefore, those potential transmission routes that are frequently repeated deserve higher attention.
5. The larger the animal group, the higher the risk. Therefore, large herds require more preventive measures than small herds.

Based on these principles herd specific biosecurity advices can be developed. By means of the Biocheck.Ugent® (www.biocheck.ugent.be) we have developed a freely available online scoring tool which allows to evaluate the biosecurity at pig and broiler herds (soon also available for cattle and layers). All this information was recently compiled in the book ‘Biosecurity in Animal Production and Veterinary Practices’. This is the first compilation of both fundamental aspects of biosecurity practices, and specific and practical information on the application of the biosecurity measures in different animal production and animal housing settings.

**GOHS1.03 – HOW FAO SUPPORTS VETERINARIANS TO IMPROVE GLOBAL BIOSECURITY**

Henk Jan Ormel  
Food and Agriculture Organization (FAO), United Nations, Rome/ITALY

**GOHS1.04 – STRENGTHENING GLOBAL BIOSECURITY – PERSPECTIVES FORM THE WORLD ORGANIZATION FOR ANIMAL HEALTH**

Christine Uhlenhaut  
World Organisation for Animal Health (OIE), Paris/FRANCE

**Abstract:** The World Organization for Animal Health (OIE) has a well-recognized leadership role in protecting the world against epizootic disease through its work in the elaboration of standards for diagnosis, early detection, reporting and control of animal diseases and zoonoses. Created in 1924, decades before the UN system, the OIE has 181 member countries, official agreements with more than 70 international organizations, a network with over 300 reference laboratories and collaborating centers. We work with partners from different sectors, e.g. public health and security. The OIE is engaged in the Global Health Security Agenda and committed to the Tripartite agreement with the Food and Agricultural Organization of the United Nations and World Health Organization in providing multi-sectoral, collaborative leadership in addressing health challenges. In meeting its mandate to improve animal health, veterinary public health, and
animal welfare worldwide, the OIE has developed a strategy to address the threat posed by accidental and deliberate release of animal pathogens. OIE’s efforts in the field of biological threat reduction are multifaceted and driven by the diversity of its Members and the issues to be addressed. Some of its efforts specifically address biological threat reduction, these include laboratory twinning projects, the Veterinary Legislation Support Program and the activities to support rinderpest post-eradication phase as well as the development of guidelines for the investigation of suspicious biological events. The OIE has also held two Global Conferences on Biological Threat Reduction (2015 and 2017) which have brought together the public health, animal health, security and law enforcement sectors to collaborate on activities. The OIE continues to expand on existing partnerships and explore new ones to leverage expertise in biological threat reduction efforts.

GOHS1.05 – HEALTH AND SECURITY INTERFACE – THE ROLE OF WORLD HEALTH ORGANISATION (WHO)
Maurizio Barbesci, Eric Bertherat
World Health Organisation (WHO) Geneva, Geneva/SWITZERLAND

Abstract: In 2002, the World Health Assembly’s Resolution 55.16 on “Global public health response to natural occurrence, accidental release or deliberate use of biological and chemical agents or radionuclear material that affect health”, underlines that the World Health Organization focuses on the possible public health consequences of a chemical, biological, radiological, or nuclear incident, regardless of whether it is natural, accidental or deliberate. This resolution acknowledges that natural occurrence or accidental release of chemical, biological, radiological, and nuclear material could have serious global public health implications and jeopardize the public health achievements of the past decades. In an effort to harmonize the World Health Organization’s security-relevant programs, a Health Security Interface was created to serve as a platform for initiatives with health/security implications and consequences and work as a repository of experiences. Dr Maurizio Barbesci and Dr Sabri Gmach are heading the Health Security Interface for the World Health Organization.

The concept of health security interface applies to those public health activities whose performance involves, to some extent, the security sector (law enforcement, police, national armies, ministries of defence, military doctors, international and non-governmental organizations with a security relevant mandate). These activities encompass inter alia (1) specific areas of work (smallpox and other high-risk pathogens, dual research and development for biosecurity, toxic chemical agents); (2) deliberate events and joint-activities of various degrees of overlapping with security-relevant actors (research, operations, training, networks and labs); (3) outbreak response operations in non-permissive environments, highly politicized contexts, conflicts, and wars. Within the World Health Organization, the Health Security Interface focuses on providing preparedness and response for any biological outbreak with an emphasis on deliberate events. To this end, the Health Security Interface is reviewing and revising existing tools in relation to chemical, biological, radiological, and nuclear events, identifying current gaps and challenges in the realm of health security, and developing new discussions, protocols, and tools to combat these gaps and challenges.

GOHS1.06 – BIOSECURITY - CASE STUDY FROM NIGERIA
Gani Enahoro
WVA Councillor for Africa

Abstract: Nigeria is located in West Africa, with a population of about 200 million and a land area measuring 923,768 km². Biosecurity standards that fit international practices also exist here. These include border control policies for import and export permits, vaccination and immunization certifications. The multi-disciplinary collaboration for One Health has further heightened the need for more vigilance that biosecurity represents, especially with the recent and reported outbreaks of viral haemorrhagic fevers in humans, such as Lassa fever, Monkey pox and Ebola virus disease (EVD). EVD with very high mortality rate particularly created panic of spread when the index American-Liberal patient from a neighbouring country, Liberia broke procedures and entered Nigeria. He turned violent at the suggestion of being quarantined for intensive management. In his aggression eleven health workers contracted the disease and seven died. A unique model of contact tracing, massive publicity and insistence on biosecurity and biosafety measures were effectively deployed to contain the spread of EVD. Highly pathogenic avian Influenza disease also devastated poultry farms in Nigeria with millions of birds dead or killed through elimination policies of the veterinary authorities. All these events have heightened awareness and compliance with the principles of biosecurity.

PHT2 Disaster Management
Sunday, May 6, 2018
12:00 – 17:30
PHT2.01 - DISASTER RISK REDUCTION AND MANAGEMENT: A VETERINARY PUBLIC HEALTH PERSPECTIVE
Paolo Dalla Villa
National Reference Centre for Urban Hygiene and Non-Epidemic Emergencies, Pescara/ITALY

Abstract: Natural disasters, such as earthquakes, flooding, snowstorms and forest fires, have become recurring events in a number of countries. In 2015, 117 countries were hit by 376 catastrophic events that made 110.3 million victims and caused US$ 70.3 billion damages (www.cred.be). FAO calculated the damage and losses reported during 78 disasters occurred from 2003 to 2013 in 48 developing countries. On average, agriculture has absorbed 22 percent of the total economic impact, of which 36 percent has been on the livestock subsector (www.fao.org/resilience). Indeed, these events may completely destroy critical agricultural assets and infrastructure, and even change agricultural trade flows, by causing huge losses in the production of livestock and agricultural-dependent sectors. Moreover, in increasingly urbanized territories, companion animals are subject to injuries and deep stress, abandonment or loss, and free roaming dogs might represent a danger for public health and security. Within this context, veterinarians are expected to “restore and/or ensure the welfare and health of the they are caring for, no matter which branch
of the veterinary profession they work in” and “give emergency first aid and pain relief to any animal according to their skills and the specific situation” (FVE, 2008). Unfortunately, despite the frequency of these threats, public and private components of Veterinary Services are still not fully integrated into many national and regional disasters preparedness and response networks and they are often not adequately prepared, even with all the prior lessons about what is needed for an effective response. Nevertheless, considerable progress has been made to effectively prepare for and respond to public veterinary health and food safety non-epidemic emergencies, at national and international level. In 2016, the World Animal Health Organization (OIE) has adopted the guidelines on ‘Disaster management and risk reduction in relation to animal health and welfare and veterinary public health’. Many other initiatives have been taken in parallel over the last few years, by other key international organisations (FAO, WHO), in order to support the livelihoods of many livestock-dependent communities who live in areas that are prone to natural disasters. At national level, a number of important legislative steps have been also taken. With the enactment of the Animal Protection Law 20.380 in Chile in 2013, an obligation was established for animal production and transportation providers to develop and hold “contingency plans” to deal with emergency situations. Today, thanks to the Legislative Decree No. 1 of 18 January 2018, animals are fully included in the new code of the Italian Civil Protection Service, and veterinarians will continue to play a strategic role in the assistance of animals and communities affected by calamitous events. In parallel, several international animal welfare non-governmental organisations (NGOs) have been active in disaster relief by putting operational teams with emergency veterinary aids into the field. However, it remains of outmost importance for Veterinary Services to take a leadership role in this area, with the goal of enhancing resilience at local level. In order to do so, they should proactively collaborate with lead agencies for disaster management and civil protection bodies, in close cooperation with human health agencies. NGOs and the private sectors during ordinary, alert, response and recovery times. To meet this mission, higher education, training and simulation exercises, capacity building and research/innovation programs are needed.

PH2.02 - ANIMALS IN DISASTERS MANAGEMENT
Juan Carlos Murillo
Animals In Disasters, World Animal Protection, Heredia/COSTA RICA

Abstract: La definición del concepto desastre se refiere a una interrupción seria del funcionamiento de una comunidad o sociedad que causa pérdidas humanas y/o animales, e importantes pérdidas materiales, económicas o ambientales; que exceden la capacidad de la comunidad o sociedad afectada para hacer frente a la situación utilizando sus propios recursos[1]. Entre los eventos más comunes por su ocurrencia, podemos citar aquellos de origen natural que se clasifican en hidro-meteorológicos, biológicos y geológicos. Así como los antrópicos que son ocasionados por el hombre. De acuerdo con el Centro para la Investigación de Epidemiología de los Desastres (CRED, por sus siglas en inglés), citados por la Organización Panamericana de la Salud, en su Boletín “Desastres”[2], de los 373 desastres registrados alrededor del mundo durante el año 2010, se perdieron 296,800 vidas, y cerca de 208 millones de personas, sufrieron afectación diversa, cuyas pérdidas económicas ascendieron a casi 110 mil millones de dólares americanos. La región de América Latina y el Caribe encabezó las estadísticas, mayormente por el impacto y la alta tasa de víctimas mortales, que sufrió el terremoto en Haiti, que alcanzó el 75% de las muertes totales, con más de 300,000 víctimas mortales. Y el terremoto de Chile, que causó cerca de 30 mil millones de dólares americanos en daños y pérdidas. En México[3], entre 1980 y 2010, se dieron 170 eventos desastrosos, reportando 14,946 víctimas mortales, y 13,512,342 habitantes. Con pérdidas que ascendieron a USD $31,892,210,000. Los animales también sufren durante los desastres, de forma incluso aún más devastadora. Es usual que los propietarios no tengan tiempo suficiente para gestionar la atención y seguridad de sus animales antes del evento. Dejándolos atrás, significando en muchos casos una lenta y dolosa muerte. El Departamento de Manejo de Desastres de Protección Animal Mundial, ha venido a paliar un vacío en este campo; interviniendo en numerosas operaciones en los últimos años. Es necesario considerar el impacto emocional de los desastres en las víctimas, comprendiendo los factores que inciden sobre los individuos, como la pérdida de sus animales tanto de compañía como de producción, afectando sus medios de vida[4]. Por lo complejo del tema, Protección Animal Mundial compiló el curso en línea PrepVet, para la capacitación y actualización de profesionales y otros involucrados -Ministerios de Agricultura y Ganadería, Cámaras de Ganaderos o Asociaciones de Productores, Cooperativas, etc...- en gestión y reducción de riesgos pecuarios, aliviándose con organizaciones como Protección Civil, Cruz Roja y algunas ONGs involucradas en la materia, donde los conocimientos y habilidades adquiridos, permitirán a los médicos veterinarios sumar un valor agregado a los servicios que proveen, garantizando la continuidad de negocio y, resiliencia a través de la prevención y la preparación ante desastres. [1] EIRD, Glosario de terminología, 2004: http://www.eird.org/gestion-del-riesgo/glosario.pdf [2] Boletín “Desastres”: http://new.paho.org/disasters/newsletter/index.php?option=com_content&view=article&id=456&Itemid=8&lang=es [3] http://www.preventionweb.net/english/countries/statistics/?cid=112 [4] Moreno-Ceballos, N y Matlin, A. Asistencia psicológica a niños víctimas de desastre. Plan Internacional. INDESUI. Santo Domingo. República Dominicana, 2000


PH2.03 – DEVELOPMENT AND STRUCTURE OF ANIMAL DISASTER RESPONSE IN THE STATES

Cheryl Eia
Dairy and Meat Inspection Agency, Minnesota Department of Agriculture, St Paul/UNITED STATES OF AMERICA

No abstract available.
**PHT2.04 - VETERINARY INPUT IN DISASTERS**

Miguel Stevens
Flemish Order of Veterinary Medicine, Ghent/BELGIUM

**Abstract:** The input of Disaster Veterinary Medicine is becoming more and more recognized in the world of One Health. One Medicine. Veterinarians in different parts of the world are organizing themselves in order to be prepared to react on short time notice. Veterinarians have the advantage to have a very broad training, not only in clinical medicine and in epidemiologic medicine, but also in Food hygiene and technology and preventive medicine, especially to prevent zoonoses.

Disasters can be categorized depending on the cause (Natural, social or technological), the severity of the consequences (severe disaster, large accident with limited effect or disaster with limited effect). The effect can be limited because the low number of victims or the small size of effected surface.

Veterinarians play an important role in each of the 4 phases of a disaster:

- **The ANTICIPATION** is consulting in preventive measures to reduce the risks or at least the consequences of disasters
- **During the preparation,** equipment must be prepared and specific training is followed.
- **In the emergency phase,** there is the care for the working animals and the victimized animals, but also the coordination of veterinary care of livestock and the sanitary advice for food and water hygiene.
- **During the repairation phase,** the veterinarian has an important contribution to the built up

Animals play different role in humans life, and all can be affected in disasters:

- Animals as working companions such as working dogs, horses
- Animals as victim (companion animals, wild animals and farm animals)
- Animals as danger, such as roaming animals and as vectors of diseases
- Animals as feed, with influence on food safety and food security
- Animals as risk indicators (environmental pollution)

All these elements demonstrate that veterinary disaster medicine should be a specialty that merits more attention, and that efforts should be made to create a European recognized training program.

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**PHT2 Emerging Zoonosis**

Monday, May 7, 2018
13:30 – 17:30

**PHT2.08 - INFECTIOUS DISEASE EMERGENCE AT THE ANIMAL/HUMAN INTERFACE: SHIFTING THE PARADIGM FROM DETECTION AND RESPONSE TO PREVENTION AT THE SOURCE**

David Heymann
Department Of Infectious Disease Epidemiology, London School of Hygiene and Tropical Medicine, London/UNITED KINGDOM

**Abstract:** The majority of emerging infectious diseases have their source in animals, and emerge when they breach the species barrier to infect humans- the population in which they are often first identified. The response is a series of emergency activities to contain and manage the infection in human populations, identify emergence pathways, and at the same time to identify the source of the infection in nature. If the infection is found to have a source in animals, and if animals cause a continuous threat of human infection, culling is often recommended; it is more cost-effective, however, to shift the paradigm from disease surveillance, detection and response in humans; to prevention of emergence at the source by understanding and mitigating the factors, or determinants, that influence animal infection. These determinants are clearly understood from the study of previous emergence events and include human-induced changes in natural environments, urban areas and agricultural systems; raising and processing animal-based foods; and the roles of global trade, migration and climate change. Better understanding of these factors learned from epidemiological investigation of past and present emergence events, and modelling and study of the cost effectiveness of interventions that could result in their mitigation, could provide evidence necessary to better address the political and economic barriers to prevention of infections in animals. Such economically convincing arguments for change and mitigation are required because of the basic difference in animal health – driven by the need for profit: and human health - driven by the need to save lives.
ethics” have evolved over the last century. Traditionally, professions are confronted with ‘why questions’ that refer to public and ethical dimensions of the veterinary profession, not least in relation to animal welfare. Codes of professional veterinary ethics in Europe, North America and Australasia today have animal health and welfare as a top priority (followed by concern for the interests of clients). However, professional veterinary ethics may be under threat from changes in the way that veterinarians deliver their services. Traditional mixed practices are dying out, and vets working with farm animals are increasingly specialized. Farms are getting bigger, farmers are more organized, knowledgeable and self-confident; and large corporations play a huge and growing role. As a consequence, professional veterinary ethics does not seem to drive farm animal welfare to a great extent. The same may be true of other veterinary specializations such as laboratory animals or public health. Until recently, small animal vets have maintained their independence and taken the lead when it comes to promoting standards for keeping and caring for companion animals. However, this has changed dramatically in some countries where many independent small animal practices have been bought-out by large corporations, which are not necessarily owned or managed by veterinarians. Because of this, responsibility for ethical policies may be increasingly defined by the corporations, rather than the individual veterinarians. As such, professional veterinary ethics may, to a significant degree, be overtaken by corporate social responsibility. Of course, the veterinary profession still has opportunities to contribute towards ensuring animal welfare at a higher level than existing legislation requires. However, due to a monopoly on the provision of many veterinary services, the profession may find it difficult to ban services to which people are entitled by law. Individual veterinarians may opt out; and veterinary associations may recommend or require their members to abstain from delivering certain services, but in practice it is often difficult to stop activities that are legal, but ethically questionable (e.g. declawing of cats in the US).

Keywords: veterinary ethics, professionalism, veterinary profession, Animal welfare

PHT2.10 - ONE HEALTH IN PRACTICE - DISASTER PREPAREDNESS AND RESPONSE

Lisa Conti
Florida Department of Agriculture and Consumer Services, Tallahassee/UNITED STATES OF AMERICA

Abstract: New World Screwworm Eradication in South Florida – A One Health Success Story During October 2016, a foreign animal disease, New World screwworm (Cochliomyia hominivorax) was confirmed in endangered Key deer from a wildlife refuge on Big Pine Key in Monroe County, Florida. New World screwworms are fly larvae (maggots) that can infest livestock and other warm-blooded animals, including people. Florida Department of Agriculture and Consumer Services worked closely with the U.S. Department of Agriculture and other One Health partners on control and response efforts to eradicate the screwworm. Eradication activities included sterile fly release, enhanced surveillance, and extensive public outreach in order to engage the public in early detection of the screwworm and treatment of infected animals. With no new screwworm finds since January 10, 2017, sterile fly releases continued in the Infested Zone through April 25, 2017, and Florida was officially free of this pest January 2018.

Keyword: screwworm, preparedness, One Health success.
the curriculum of many veterinary schools and has been discussed both on rather abstract and quite concrete levels since the 1970s. Nonetheless, due to a number of developments, veterinarians are confronted with new questions or more complicated versions of well-known questions. For instance, the development towards preventive veterinary medicine already raises new ethical questions in comparison to the traditional focus on curing animals. On top of this, as a result of improved knowledge of the animal genome, it could be possible to introduce precision medicine as a prevention strategy for animal health. This shifts traditional questions on when to withdraw treatment and decide to euthanize an animal into questions of when to start prevention and consider an animal as a patient. Another development is related to the position of animals. Traditionally animals are in the private realm, e.g., it is a personal decision to keep pets or to become a farmer. However, currently animals become part of the public realm, e.g., there is European and national legislation on animal welfare and animal related questions are regularly subject of discussion in national parliaments. As a consequence, ethical questions are not only restricted to moral conflicts with individual clients or colleagues, but one has to deal with a plurality of positions that can be recognized in society. Next to mapping this field and analyzing some of the [new] ethical questions, the lecture will focus on the question what is needed to deal with these questions in a practical way.

**Keyword:** veterinary ethics, integrity, public debate, professional ethics

**PHT2.13 – ETHICAL DECISION MAKING AND ANIMAL WELFARE ISSUES IN VETERINARY PRACTICE**

Patricia Turner
Pathobiology, University of Guelph, Guelph/CANADA

No abstract available.

**PHT2 Communication**

**Tuesday, May 8, 2018**

12:30 – 13:30

**PHT2.14 – EFFECTIVE VETERINARY COMMUNICATION FOR ANIMALS AND THE PROFESSION**

Sean Wensley
PDSA, Belfast/UNITED KINGDOM

**Abstract:** Communication is central to the veterinary profession having influence in improving animal health and welfare, and being recognised for our diversity of societal contributions. Enhancing and protecting the health and welfare of animals is the profession’s fundamental purpose and veterinary professionals have a clear duty to champion animal welfare, both for animals under our direct care and more broadly across society. Principally, our communications should be to advocate for the best interests of animals, in both veterinary practice and policy. To achieve animal welfare improvements, in addition to clear recommendations in clinical settings and public debate, we need effective communications to develop trusting client relationships, to help us explain veterinary fees and to convey our value to the public and decision-makers.

These are secondary, enabling messages to achieve our primary goal of improving animal welfare. There is a risk to our reputation as an animal welfare-focused profession if our primary message and motivation is perceived as serving the interests of clients, or prioritising our own financial or intellectual interests. Opportunities for the profession to communicate our messages can be considered at individual, community, national and international levels. Individual veterinary professionals have direct contact with animal keepers and owners, with unique opportunity and responsibility to advise on animal health and welfare. Social science informs these interactions in areas such as how to effectively achieve human behaviour change and the ethics of influencing clients. Veterinary practices can use a range of communication channels to serve as credible animal welfare hubs in communities, while national and international veterinary bodies can develop member-led campaigns to inform and influence the media and decision makers. Veterinary leadership in animal health and welfare relies on effective communication of thoughtfully developed positions and messages. Veterinary communications are influential by virtue of their reliability and integrity, based on the profession’s competences in science and ethics. Effective communication ensures the veterinary profession remains valued, respected, trusted and able to fulfil its central remit of improving the quality of animals’ lives.

**Keywords:** Communication, Veterinary, Animal welfare, Value, Advocacy

**PHT2 Human Animal Bond**

**Tuesday, May 8, 2018**

14:30 – 15:30

**PHT2.15 - FROM LOVE TO ABUSE: UNDERSTANDING THE HUMAN-ANIMAL BOND**

Jaume Fatjo Rios
Department Of Psychiatry And Legal Medicine, Universitat Autonoma de Barcelona, Barcelona/SPAIN

**Abstract:** Dogs and cats were domesticated thousands of years ago and are now present in almost every human society around the world. Nevertheless, only recently scientists have begun to analyse both positive and negative aspects of the human-animal bond. For centuries people have recognised the value of animals for obvious economic reasons, but also as an important source of physical and emotional wellbeing. Indeed, living with companion animals seems to improve physical and psychological health, although research on this topic is still at a very early stage. However, there are also negative aspects of pet ownership, including animal hoarding and the nowadays well-recognised relationship between animal abuse and cruelty towards people. Animal hoarding seems to be a common and yet under-reported condition, currently included within the category of hoarding disorders in DSM-V. Regarding abuse and cruelty, individuals who abuse other people, particularly women and children, often have a background of abuse towards companion animals. Finally, companion animal abandonment and relinquishment is a very serious animal welfare problem that also has a very high economic impact in society. During the talk, we’ll discuss the specific psychological and sociological mechanisms that help to understand
our attitudes and behaviours towards animals. We’ll pay special attention to our natural tendency to act humbly towards animals, but also to the well-defined mechanisms of moral disconnection that are often activated in scenarios of animal abuse and neglect.

SC2 Short Communications 2
Sunday, May 6, 2018
17:30 – 18:30

SC2.01 - DONKEYS AND HUMANS – THE USE OF DONKEYS ON AGRICULTURE SCHEMES IN IRELAND INFLUENCES GOVERNMENT-NGO ENGAGEMENT

Joe Collins
Slade House Farm, The Donkey Sanctuary, Devon/UNITED KINGDOM

Background: In the past in Ireland, donkeys proved to have innumerable uses such as the transport of good and people, being capable of surviving and working on terrain that was unsuitable for horses, which latter, people could not afford in any case. Today, donkeys are mainly kept either as companion animals or as Livestock Units (LUs) registered on agricultural area aid schemes to aid in the collection of farm subsidies. In 2017 the Department of Agriculture (DAFM) who administer the related subsidy scheme, also made an ex gratia payment of €120,000 to The Donkey Sanctuary for its work in rescue/rehoming, in controlling indiscriminate breeding and in providing veterinary services to privately owned donkeys in Ireland.

Methods: Information was gathered concerning the mapping of areas eligible for subsidy payments, the numbers of applicants, the place of origin of applicants and the numbers of registered donkeys (and other equidae) these applicants used as LUs for the years 2012, 2013 and 2014. The value of payments made to applicants registering equidae as LUs during these years was also gathered. The Donkey Sanctuary provided information regarding their interactions with private donkey owners including subsidy applicants – the collection of background information, the provision of veterinary services and the rehoming of donkeys to applicants who might register them as LUs.

Results: Between 2010 and 2011 the Euro value of payments made to the owners of equines registered as LUs increased from €4 to €6.2 M and the number of equines increased from 10 to 18.5 thousand. Between 2012 and 2014 these figures fell to circa €2.3 M and six thousand respectively. Included in the latter were some 2.5 thousand donkeys. In the first 11 months of 2017, The Donkey Sanctuary provided donkey welfare improvement services to 176 owners of 700 private donkeys including circa 90 castrations, 450 farriery, 50 dental treatments, 130 identification and 60 husbandry including nutritional advice. They rehomed approximately 40 donkeys to subsidy applicants who might use them as LUs. The detail will be presented.

Conclusion: DAFM administer an agriculture subsidy scheme which permits the use of donkeys as Livestock Units but does not have an ostensible animal welfare function; never-the-less they make ex gratia animal welfare payments to NGOs such as The Donkey Sanctuary in support of services targeted at the owners of private donkeys. This provides an opportunity for government and NGOs to engage in such a way that public monies might be better used to support animal welfare improvements.

Keyword: donkey Ireland subsidy engagement

SC2.02 - ANTIMICROBIAL RESIDUES IN POULTRY FEATHERS: A POTENTIAL RISK IN FOOD SAFETY?

Ekaterina Pokrant1, Aldo Maddalenno1, Betty San Martin2, Javiera Cornejo1
1Medicina Preventiva, Universidad de Chile, santiago/CHILE, 2Laboratorio De Farmacologia Veterinaria, Universidad de Chile, santiago/CHILE

Background: Antimicrobials have been used in poultry production for bacterial diseases treatment. However, drug residues can remain in animal products after the cessation of drug therapies. By-products of avian industry could become a risk in food safety if antibiotics residues remain in high concentrations after treatment. Some by-products, as feathers, have shown high affinity for antibiotics suggesting the persistence of drugs in nonedible tissue when compared to edible tissues as muscle and liver. Consequently, concentrations of antibiotic in edible tissues, once the withdrawal time (WDT) is over, will be under the permitted limits, while feathers of treated chicken will show higher residues concentrations.

Methods: Controlled treatments studies were performed in broiler chickens in order to quantify oxytetracycline plus it epimer (OTC; 4-epi-OTC), florfenicol plus florfenicolamine (FF; FFA), sulfachlorpyridazine (SCP) and tylosin (TYL) residues concentrations in edible tissues (muscle and liver) and feathers. One-day-old broiler chickens were kept with ad libitum access to water and non-medicated feed. They were treated with pharmaceutical formulations authorized for their use in fattening birds. Samples were taken at different times, considering the WDT of the pharmaceutical formulations and following EMA Guidelines (EMA/CVMP/SP/735325/2012). Samples were analyzed through LC-MS/MS using previously In-House validated analytical methodologies following a protocol based on Decision 657/2002/EC.

Results: For OTC plus 4-epi-OTC in feathers, concentrations of 1127.3 µg kg⁻¹ were detected and quantified at day 7 post-treatment, while in edible tissues at the same sampling time the concentrations were lower than the LOQ (21.2-25.0 µg kg⁻¹ OTC; 21.3-27.2 µg kg⁻¹ 4-epi-OTC) of the analytical methodology. For FF and FFA, concentrations in feathers reached a mean concentration of 228.98 µg kg⁻¹ 30 days post treatment, meanwhile in edible tissues detected analytes were lower than the LOD (20 µg kg⁻¹) at 10 days post-treatment. In the case of the SCP residues, at day 34 post treatment, mean concentrations were of 29.45 µg kg⁻¹ for feathers. Meanwhile, quantified concentrations for muscle were lower than the LOD (10 µg kg⁻¹) at day 14 post-treatment, and in liver mean concentrations were of 16.20 µg kg⁻¹. For TYL residues at day 7 post-treatment mean concentrations in feathers were of 301.93 µg kg⁻¹, while at the same sampling point in both edible tissues, no residues of this were detected.

Conclusion: Antimicrobials concentrations in feather samples remained elevated throughout the experiments, while in muscle and liver these fell below established MRLs.
SC2.04 - EVALUATING THE PRESENCE OF VETERINARY DRUGS AND PESTICIDES RESIDUES IN ANIMAL ORIGIN PRODUCTS FROM PEASANT FAMILY FARMERS OF CHILE

Javier Cornejo, Marianela Quintrel, Francisco Lagos Susaeta, Ulsette Lapietre Acevedo, Pilar Oviedo Hannig, Mario Maino Menéndez, Susaeta, Lisette Lapierre Acevedo, Javiera Cornejo
Veternaria, Universidad Peruana Cayetano Heredia, Lima/PERU, Instituto Of Biodiversity, Animal Health And Comparative Medicine, University of Glasgow, Glasgow/UNITED KINGDOM

Background: Family farming is the predominant form of agriculture and animal husbandry, since it produces about 80% of the food supply worldwide. The use of veterinary drugs and pesticides may lead to the presence of residues in these food products. However, presence of residues in products from small farmers has been poorly documented in our country. Legislation regulates their use and establishes maximum residual limits (MRLs) for chemical substances, in accordance with Codex Alimentarius. Nevertheless, current surveillance programs leave aside foods from small farmers, mostly traded in local markets. Considering this, the objective of the present study was to assess the presence of veterinary drugs and pesticides residues in products of animal origin (lamb meat, milk and honey), from small family farmers of eight regions of Chile.

Methods: Antimicrobial screening method (four-plate test), liquid chromatography-tandem mass spectrometry (LC-MS/MS) and high-performance liquid chromatography-tandem mass spectrometry (HPLC-MS/MS) were used for the detection and quantification of chemical residues of veterinary drugs (antimicrobials and antiparasitics). On the other hand, gas and liquid chromatography-tandem mass spectrometry (GC-MS/MS and LC-MS/MS) was used for the analysis of pesticides. A total of 122 samples were taken to the products of small farmers to perform the laboratory analysis: honey (29 samples from Bio-Bio and Valparaiso regions), lamb meat (14 samples from O’Higgins region), and milk (79 samples from Bio-Bio, Araucania, Los Ríos and Los Lagos regions).

Results: For pesticides analysis, 2 of 15 (13.3%) milk samples contained Permethrin residues, although detected concentrations were under MRL established in Chile. Meanwhile in honey samples, none pesticides residues were detected. In the case of veterinary drugs, 4 of 14 (28.6%) lamb meat samples and 11 of 79 (13.9%) milk samples showed evidence of antimicrobial residues. Detected antibiotics correspond to tetracyclines, macrolides, aminoglycosides and beta-lactams families. From these samples, 1 lamb meat sample (7.1%) and 2 milk samples (2.5%) where non-compliant exceeding the established MRLs for these matrices. For honey, in 7 of the 29 samples (24.1%) traces of tetracyclines (oxytetracycline and tetracycline, with its epimers) and sulfonamides (sulfamethazine and sulfamerazine) were detected. Antibiotics concentrations detected in honey were under de method LOQ, therefore they were not quantified. Additionally, amitraz was analyzed in honey samples; however, no residues of this substance were detected in this matrix.

Conclusion: Our findings show that there is presence of chemical contaminants in some food products from small family farmers. However, most of the analysed samples were compliant, as concentrations founded did not surpass established MRL. This study provides a baseline to reconsider the transfer, adaption and awareness of good management practices (GMP) in small family farming in Chile. Collected data will allow…

SC2.03 - ESTIMATING THE PREVALENCE OF ESBL E.COLI AND MRSA IN VAMPIRE BATS AND LIVESTOCK OF LIMA, PERU

Carlos M. Shiva, Nestor Falcon, Julio Benavides, Gabriela Melgar
Veternaria, Universidad Peruana Cayetano Heredia, Lima/PERU, Instituto Of Biodiversity, Animal Health And Comparative Medicine, University of Glasgow, Glasgow/UNITED KINGDOM

Background: The role of wildlife in the dissemination of antibiotic-resistant bacteria remains poorly understood. Vampire bats are one of the wildlife species with the highest rates of contact with livestock in Latin America, because of their nightly feeding on livestock’s blood. The aim of this study was to estimate for the first time the prevalence of extended-spectrum beta-lactamase (ESBL)-producing E. coli and Methicillin resistant Staphylococcus aureus (MRSA) in vampire bats and livestock bitten by bats in the Lima region.

Methods: We collected fecal samples from 134 vampire bats (Desmodus rotundus) in 5 colonies located in the region of Lima, and 179 livestock animals living less than 10 km from each bat colony. Bacteria were isolated within 12 hours in Hicrome® ESBL and Hicrome® MRSA media, incubated for 24 hours at 37°C. Suspected colonies of E. coli and MRSA were then confirmed by API® 20E and resistance was confirmed for bats by the double-disc diffusion method. The prevalence of resistant bacteria was calculated as the total number of individuals harbouring at least one isolate of each antibiotic resistant bacteria.

Results: The overall prevalence of ESBL E. coli in vampire bats was 4.5 % [IC 95%: 2.8%-6.2%], which was much lower than the prevalence observed in livestock, 57.7 % [IC 49.5%-66%]. Among bats, no significant difference of prevalence was detected between colonies while in livestock, all except one sampling area have the same prevalence. No isolate of MRSA was detected in neither vampire bats [prevalence 95% CI: 0-2%] nor livestock (95% CI: 0-3%).

Conclusion: Vampire bats in the Lima region have a low prevalence of ESBL E. coli while this prevalence is high among livestock, suggesting that, if occurring, transmission of resistant genes happens from livestock to bats. No isolate of MRSA was detected in bats or livestock, suggesting that these species are not acting as main carriers of MRSA in small-scale farms around Lima.

Keyword: ESBL, vampire bat, MRSA, antibiotic-resistant

or even below LOD established for each analyte. High residues levels in feather samples could be explained by pharmacokinetic characteristics of each drug. Additionally, the highly vascular pulp within feathers calamus, could explain the slow elimination of a drug in treated birds. Feathers can be therefore, a re-entry route for antimicrobial drugs into food chains becoming a risk to public health, especially in regards to development of antimicrobial resistance. Hence, it becomes interesting monitoring that animal diets do not include in their formulation feathers contaminated with antimicrobial residues.

Keywords: ANTIMICROBIAL, RESIDUES, POULTRY, FEATHERS, FOOD SAFETY

PRODUCTS FROM PEASANT FAMILY FARMERS OF CHILE

Javier Cornejo, Marianela Quintrel, Francisco Lagos Susaeta, Ulsette Lapietre Acevedo, Pilar Oviedo Hannig, Mario Maino Menéndez
Veternaria, Universidad Peruana Cayetano Heredia, Lima/PERU, Instituto Of Biodiversity, Animal Health And Comparative Medicine, University of Glasgow, Glasgow/UNITED KINGDOM

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Keyword: ESBL, vampire bat, MRSA, antibiotic-resistant
improving production conditions, contributing to the development of programs focused on primary products from peasant family farmers.

**Keywords:** veterinary drugs, Pesticides, RESIDUES, Animal Origin Products, Family Farmers

**SC2.05 - COMPARATIVE STUDY BETWEEN CAPRINE AND BOVINE BSE IN EXPERIMENTALLY INOCULATED GOATS WITH DIFFERENT MUTATIONS AT CODON 222**


Research Centre for Encephalopathies and Transmissible Emerging Diseases and Department of Animal Pathology, Veterinary Faculty, University of Zaragoza, 50013 Zaragoza, Spain. Institute for Health Research Aragón (IIIS and Food and Agricultural Research, Zaragoza/SPAIN, 1 Central Veterinary Institute of Wageningen UR, Wageningen/NETHERLANDS, 2 UMR INRA ENVT 1225, Interactions Hôtes Agents Pathogènes, École Nationale Vétérinaire de Toulouse, 31076 Toulouse, France, Toulouse/FRANCE, 3 UMR INRA ENVT 1225, Interactions Hôtes Agents Pathogènes, École Nationale Vétérinaire de Toulouse, Toulouse/FRANCE

**Background:** Prion diseases or Transmissible Spongiform Encephalopathies (TSEs) are progressive and fatal neurodegenerative diseases that affect humans and other mammal species. These diseases include Creutzfeldt-Jacob disease (CJD), Gerstmann-Sträussler-Scheinker disease (GSS), and familial familial insomnia (FFI) in humans, as well as scrapie in sheep and goats, bovine spongiform encephalopathy (BSE) in cattle, and chronic wasting disease (CWD) in deer and elk. BSE represented one of the largest food crises in the last decades. The efforts of the European Union have managed to almost eradicate the disease in cattle; however, the BSE agent has demonstrated a high capacity to cross species barriers and other ruminant species may have been affected. The only two cases of bovine spongiform encephalopathy (BSE) diagnosed in small ruminants have occurred in goats, implying a real high risk for human health that could be minimized through genetic selection of resistant animals according to their PRNP genotype. Recent studies have suggested that K222 allele confers high resistance against scrapie and caprine BSE after oral challenge.

**Methods:** This study compares two experimental studies that attempt to define the importance of different mutations at codon 222 of PRNP gene in the distribution of PrPSc in goats after intracerebral inoculation with BSE. In the first study, nine animals were inoculated with caprine BSE agent; while in the second study, five animals were inoculated with bovine BSE.

**Results:** In both studies, goats carried the homozygous genotypes Lysine 222KK and Glutamine 222QQ; and in the first study also the homozygous Glutamine/Lysine 222QK. Most of 222QK animals from both studies presented clinical signs after 15 months in case of caprine BSE goats, and after 19±2 months in bovine BSE individuals. The 222KK animals inoculated with caprine BSE presented clinical signs 22 months after inoculation and the bovine BSE goats after more than 29 months, which indicate that the presence of K222 allele only increase the incubation period of the disease but not confers total resistance in goats inoculated with BSE. The distribution of PrPSc in the CNS has been evaluated by immunohistochemistry, and the phenotype of PrPSc accumulation was very similar in both groups of animals, existing only differences concerning the magnitude of deposition, which varied depending on the genotype and inoculum. In addition, a wide distribution of PrPSc was observed throughout the organism, but always associated with lymphoid tissue or peripheral nerve fibers.

**Conclusion:** It has been observed that the longer incubation period in the 222KK animals inoculated with caprine BSE allows centripetal dissemination of PrPSc to the tissues farthest from the point of inoculation, which may represent a risk for the maintenance of food chain safety.
staining. Additionally, Trk and p75 transmembrane receptors were mapped at the perineuronal and neuropil level, p75NTR also exhibited an intracytoplasmic glial pattern in both models, although it was much more conspicuous in mice which showed a “branched” immunostaining reminiscent of astrocytes. Because p75NTR showed the most promising results, our current research is focused on this receptor. Whole brain mapping is being performed with a significant number of samples from each species (sheep and mouse), using immunohistochemical procedures, and p75NTR expression at the gene and the protein level will be measured by quantitative PCR (qPCR) and Western blot, respectively. Additionally, confocal microscopy will be used to assess the colocalization of p75NTR and PAPC deposits.

**Conclusion:** These studies are expected to identify differences in p75NTR expression and/or distribution in brain between infected and healthy animals, and thus prove its potential as a biomarker or as a therapeutic agent for prion diseases.

**SC6 Short Communications 6**

**Monday, May 7, 2018**

**17:00 – 18:00**

**SC6.01 - PATHOLOGY AND TISSUE TROPISM OF NATURAL RIFT VALLEY FEVER VIRUS INFECTION IN SHEEP**

Leiza Odendag1, Sarah J. Clift1, Geoffrey T. Fosgate2, Sally A. Davis3

1Paraclinical Sciences, University of Pretoria, Pretoria/SOUTH AFRICA, 2Department Of Production Animal Studies, University of Pretoria, Pretoria/SOUTH AFRICA, 3Diagnostic Medicine/pathobiology, Kansas State University, Manhattan/KS/UNITED STATES OF AMERICA

**Background:** The pathology of Rift Valley fever (RVF) was first characterized following the death of approximately 4,700 lambs and ewes on a farm in Kenya in 1931. There are inconsistencies in the description of the pathology in sheep and limited immunohistochemical studies of the tissue and cell tropism of natural RVF virus (RVFV) infection are available.

**Methods:** All specimens originated from the carcasses of naturally infected sheep necropsied during the 2010 RVF outbreak in South Africa. A total of 124 cases were available for study of which 99 cases were classified positive for RVF with one or more positive test results for histopathology, IRT-PCR and/or IHC. Tissues were examined by histopathology (haematoxylin and eosin stains) and immunohistochemistry (polyclonal hyperimmune mouse sera and detection with a basic avidin-biotin complex system). Histomorphological features in all available organs were systematically recorded and reviewed within the context of lesions associated with RVFV infection and the results statistically analysed.

**Results:** Liver necrosis was confirmed as the most distinctive histopathological feature of RVF cases in adult sheep. Necrosis is distributed irregularly throughout the lobule and focal degeneration of hepatocytes is accompanied by infiltration of the lesion with chiefly neutrophils and histiocytes. Sixty-four percent (45/70) of the cases where liver, spleen and kidney tissues were available had foci of acute renal tubular epithelial injury in addition to necrosis in both the liver and spleen. Splenic necrosis was most apparent in the germinal centres, mantle zones and marginal zones of the white pulp and was characterized by the presence of cell debris and tangible body macrophages. Splenic necrosis was significantly associated with necrosis in the lymph nodes [rho = 0.532, P = 0.023]. Severe changes were also observed in the gut-associated lymphoid tissue in the small intestine that mirrored changes identified in the lymph nodes. Other significant histopathological lesions included foci of necrosis in the adrenal glands, gallbladder, small intestine and skin; frequent pulmonary edema; rare pulmonary hemorrhage; and hemorrhages in the myocardium and testis. RVFV antigen was detected in the liver, kidney, spleen, lymph nodes, lung, adrenals, heart, gastrointestinal tract, tongue, gallbladder, skin, uterus, and testis. The liver was most consistently and unequivocally positive for RVFV antigen followed by the spleen, kidneys, lung and skin. Notable, three cases had no discernible histological lesions or immunohistochemical labeling in the liver, but RVFV antigen was observed in the kidney. RVFV-laden macrophages were detected in the liver, kidneys, spleen, lymph nodes, lungs and the small intestine. Other RVFV antigen positive cells included hepatocytes, adrenocortical epithelial cells, renal tubular epithelial cells, epidermal keratinocytes, microvascular endothelial cells and vascular smooth muscle cells.

**Conclusion:** It is recommended that veterinarians and veterinary pathologists take multiple samples from the liver, spleen and kidneys of sheep suspected to have RVF to include or exclude a diagnosis. Routine sampling of skin from the nose and ears might also be a useful adjunct sample since 55% of the skin samples in this study tested positive for RVFV.

**SC6.02 - SURVEILLANCE OF SEVERE FEVER WITH THROMBOCYTOPENIA SYNDROME (SFTS) VIRUS ANTIBODIES IN HUMANS AND ANIMALS IN EHIME PREFECTURE, JAPAN**

Toshiya Kimura

Food And Sanitation Division, Ehime Prefecture Yawatahama Department of Health, Welfare and Environment, Japan, Yawatahama City/JAPAN

**Background:** Severe fever with thrombocytopenia syndrome (SFTS) is a tick-borne systemic infection caused by SFTSV virus (SFTSV), which belongs to Genus Phlebovirus, Family Bunyaviridae. SFTS was first reported from China in 2011 as a novel bunyavirus infection. Since then, SFTS has also been reported from Japan and South Korea in 2013. 315 cases (60 fatal) and 23 cases (8 fatal) have been reported from Japan and Ehime prefecture as of November 1, 2017. While the main infection route of SFTSV to humans is via SFTSV-carrying tick-bite, transmission through direct contact with blood and/or body fluid of the SFTS patient to the patient’s family members or medical providers has been reported from China and South Korea. An infection case to a person from the stray cat infected with SFTSV has been reported for the first time in the world from Japan in 2017. The stray cat has been completely cured, but the infected person has died. Incubation period of SFTS is 5-14 days. The signs/symptoms in the early phase of the disease are fever, gastrointestinal symptoms (anorexia, nausea, vomiting, etc.), headache and myalgia, followed by neurological symptoms (impaired consciousness) and
bleeding (gingival oozing, bloody diarrhea, hematuria) in the later phase of the disease. Laboratory findings include lymphopenia and thrombocytopenia in total blood cell counts, and increased level of AST, ALT and LDH in the serum chemistry. In severe cases, however, no recovery signs are observed in the later stage of the disease and signs/symptoms such as impaired consciousness and bleeding tendency appear. The pathophysiology of fatal SFTS patients are a combination of the disseminated intravascular coagulation and multiple organ failure. So far, the case fatality rate of SFTS patients in Japan has been approximately 19%. No vaccines or specific therapeutics against SFTS are currently available. The purpose of the study is to determine the surveillance and risk factors of SFTSV infection, to provide a new insight into guiding future decisions on preventive measures for controlling SFTS in Japan.

Methods: Surveillance of SFTSV antibodies in 694 healthy persons aged over 50-years old (319 male, 375 female) and 107 animals (40 wild boars, 20 wild deer, 33 outdoor dogs, 14 stray dogs) in Ehime prefecture.

Results: One of 694 (0.15%) healthy persons, 10 of 40 (25.0%) wild boars, 4 of 20 (20.0%) wild deer, 3 of 33 (9.1%) outdoor pet dogs and 2 of 14 (14.3%) stray dogs were determined to be seropositive for SFTSV antibody in neutralization and ELISA, respectively. A seropositive person is a healthy 74-years-old woman and has not kept a dog and a cat. She exhibited neutralizing activity against SFYSV although she had neither clear experience with tick bites nor SFTS-like clinical illness.

Conclusion: When most people were bitten at by a tick with a SFTSV from now on, it became clear that there is an infected possibility. SFTSV is maintained in nature within animal species and ticks. The most important preventive measure against SFTS is avoidance of tick-bite. When treating an animal, we have to pay attention to SFTS infection.

Keywords: tick-borne systemic infectious disease, SFTS

SC6.03 - EDIBLE INSECTS, NEW FUTURE FOOD: THREATS AND OPPORTUNITY

Claudio Gallottini
Food Safety, ESL - Euroservizi Impresa Srl, Torgiano (PG)/ITALY

Background: Edible insects could be the future source of protein for human consumption in a growing world population. The edible insect resource is a category of non-wood forest products collected from natural resources such as aquatic ecosystems, forests and agricultural fields. Edible Insects represent a source of food in many geographic areas for at least 2 billion people. (Below tipical insects eaten in China) Fig. 1: Insects offered to consumers inside the Donghuamen Night Market in Beijing, China.

Methods: The different possible types of ecosystems, species and livestock rearing systems were analyzed. The health risks related to the consumption of insects and the benefits to the environment and society were considered.

Results: Consuming insects has a number of advantages: they have high feed-conversion efficiency (an animal’s capacity to convert feed mass into increased body mass, represented as kg of feed per kg of weight gain); they can be reared on organic side streams, reducing environmental contamination while adding value to waste; they require significantly less water than cattle rearing; they have few animal welfare issues, although the extent to which insects experience pain is largely unknown; and they pose a low risk of transmitting zoonotic infections.

Conclusion: Edible insects could be a promising alternative for the conventional production of meat, either for direct human consumption or for indirect use as feedstock. Eating insects is not only good for health, it is good for the planet.

Keyword: Insect, Novel Food, Protein

SC6.04 - ANTIMICROBIAL RESISTANCE OF SALMONELLA ISOLATED FROM WORKERS AND PIG CARCASSES AT SLAUGHTERHOUSE IN NORTHEASTERN THAILAND

Sunpetch Angkittrakul, Seri Khangair, Weerapol Taweenan
Faculty Of Veterinary Medicine, Khon Kaen University, Khon Kaen/THAILAND

Background: Salmonellosis is an important public health problem in the world including Thailand. Human outbreaks are associated with consumption of contaminated animal-derived products and the contamination can occur at any point in the food chain from “farm to table”. High incidence of Salmonella infection has been found in many animal species and transmitted to humans mainly via contaminated food, especially from animal products, such as pork, egg and chicken meat. The increase in antibiotic resistance is attributed to misuse or excessive use of antibiotics in human and veterinary practice as well as in animal husbandry, the latter for several purposes, e.g., therapeutic, prophylaxis and growth promotion. The use of antibiotics in livestock not only selects for antibiotic-resistant bacteria but may also
increase the antibiotic-resistant bacteria in humans via the food chain. The emergence of multidrug resistance in Salmonella enterica from food producing animals has been reported.

Methods: A total of 143 samples from workers, livers, intestines and pig carcasses consisted of were collected by rectal swab 38, 22, 25 and 58, respectively at slaughterhouse, Northeast Thailand from April 2012 to September 2013. Each sample was kept in Cary-Blair media (Oxoid, UK) and kept chilled in ice box during transport to the laboratory at the Faculty of Veterinary Medicine, Khon Kaen University for isolation and identification. All samples were examined for the presence of Salmonella by using ISO 6579:2002 (ISO, 2002). Antimicrobial susceptibility test was performed using a disk diffusion method of the Clinical and Laboratory Standards Institute (CLSI, 2010) employing BD Sensisdisks (BD Diagnostics, Sparks, MD, USA) on Mueller-Hinton agar (MHA, Oxoid) plates. The concentrations of the antimicrobial agents were as follows: ampicillin (AMP) 10 mg, amoxicillin/clavulanic acid (AMC) 30 mg, chloramphenicol (C) 30 mg, ciprofloxacin (CIP) 5 mg, ceftoxatin (CTX) 30 mg, nalidixic acid (NA) 30 mg, norfloxacin (NOR) 10 mg, streptomycin (S) 10 mg, sulphamethoxazole and trimethoprim (SXT) 25 mg and tetracycline (TE) 30 mg.

Results: Salmonella spp. contaminated to workers, livers, intestines and pig carcasses were 23.7%, 22.7%, 28.0% and 27.6% respectively. An identified serovar from workers were S. Rissen (45%), S. Stanley (11%), S. Bareilly (11%), S. Hindmarsh (11%), I.4,5,12:i:- (11%) and I.v.43:2:4223:i:- (11%); from livers were S. Rissen (20%), S. Weltevreden (20%), S. Panama (20%), S. Kedougou (20%) and S. Gaminara (20%); from intestines were I.4,5,12:i:- (29%), S. Panama (14%), S. Stanley (14%), S. Weltevreden (14%), S. Kedougou (14%) and S. Anatum (14%); from pig carcasses were S. Rissen (56%), S. Weltevreden (19%), S. Stanley (13%), S. Panama (6%) and S. Virchow (6%). Ampicillin was high resistance of Salmonella spp. isolated from workers, livers, intestines and pig carcasses were 75%, 60%, 86% and 75%, respectively.

Conclusion: The same of Salmonella serovars isolated from workers, livers, intestines and pig carcasses at slaughterhouse should be cross-contamination. The prevention and control of Salmonella spp. contaminated to pork was standard slaughtering, hygiene, sanitation and meal inspection for save to consume.

Keyword: antimicrobial resistance, Salmonella, workers, pig carcasses, slaughterhouse

SC6.06 - MYCOBACTERIUM TERRA COMPLEX SPECIES IN COW RAW MILK

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Background: Nontuberculous mycobacteria (NTM), also called opportunistic or environmental are emerging causes of human diseases of global significance, as this...
group of mycobacteria has been increasingly reported as primary pathogens causing pulmonary and extrapulmonary infections. Milk is well-recognized as a potential vehicle for bovine-to-human pathogen transmission, particularly for M. bovis or NTM. Although pasteurization kills mycobacteria, raw milk consumption is a habit that remains in some countries where mycobacteria represent a threat for public health. Routine laboratory diagnosis of mycobacteria is based on microbiological culture and biochemical tests. However, these conventional procedures are laborious and sometimes fail to provide precise species identification; in addition to that, they may take several weeks. In this scenario, various molecular methods have been developed for rapid detection of mycobacterial species. Among these methods, targeting hsp65 gene and DNA sequencing are valuable techniques for microbiological confirmation and typing of mycobacterial species of animal origin. The aim of this study was to identify species of mycobacteria by microbiological and molecular procedures in the milk of cows.

Methods: A pool of milk from 142 cows which were randomly chosen from 4,766 cows in fifteen municipalities of the southwest of Paraná state, Brazil, were aseptically collected in sterile tubes after teat cleaning with iodine solution 1%. Samples were immediately stored with ice in isothermal containers (4°C), and transported to the laboratory. A milk aliquot of each cow was decontaminated by Petroff method with some modifications, smearing and stained by Ziehl-Neelsen method before to culture for acid fast bacilli detection. Afterwards, the decontaminated material was cultivated aerobically, at 37°C, on Lowestein-Jensen and Stonebrink media and kept under incubation for up 90 days. The colonies compatible with mycobacteria were stained with ZN for phenotypic classification. The Mycobacterium genus was confirmed by PCR-PRA targeting the hsp65 gene and subsequently the species were identified by sequencing with the Sanger method.

Results: Colonies suggestive of mycobacteria were isolated in 12 milk samples with average time of isolation of 30 days. Among 12 samples, two of them showed two colonies with distinct morphological characteristics on the samples, comprising 14 isolates. The 14 colonies compatible with mycobacteria yielded 441bp fragment of the hsp65 gene in PCR confirming the Mycobacteria genus. Sequencing of the hsp65 gene identified mycobacteria species in the 14 isolates sharing more than 98% identity, and compared with GenBank reference, strains were identified as follow: M. engbaekii (n=5; 36%), M. arupense (n=4; 29%), M. nonchromogenicum (n=3; 21%), and M. heraklionense (n=2; 14%), species belong to the M. terrae complex.

Conclusion: The identification of NTM is a public health concern due to the large herd in Brazil and the shedding of the pathogen by milk, besides NTM are emerging pathogens in human diseases, and the raw milk consumption is a habit still present in this population.

Keywords: hsp65 gene, Sequencing, Nontuberculous Mycobacteria, Bovine, Milk

SC11 Short Communications 11
Tuesday, May 8, 2018
16:00 – 17:00

SC11.01 - RUNNING ON EMPTY: INCREASING AWARENESS OF ANIMAL WELFARE AND COMPASSION FATIGUE THROUGH THE ONE HEALTH APPROACH

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Background: One’s health is One Health. Compassion Fatigue (CF) is the “cost of caring” for other lives in emotional, mental and physical pain (Figley, 1982). This talk will explore the integration of One Health and CF as it relates to animal caregivers in a research laboratory setting. One Health is the integrative effort of multiple disciplines to achieve optimal health for humans, animals, and the environment. Together, the three make up the One Health concept triad, and the health of each one is inextricably connected to the others. Mental health is a global health issue and addressing it through an interdisciplinary approach with evidence based medicine and biomedical research and testing has allowed us to recognize the signs and symptoms early to allow for intervention that is appropriate, treatable and effective. CF is characterized by deep physical and emotional exhaustion and a pronounced change in the ability to feel empathy. It is marked by increased cynicism at work, a loss of enjoyment of our career, and eventually can transform into depression, secondary traumatic stress and stress related illnesses. The most insidious aspect of compassion fatigue is that it attacks the very core of what brought one into their chosen profession: their empathy, care and compassion for all creatures and beings. The human-animal bond in the field of lab animal science exists in many forms. This bond, if understood and used consistently, can minimize certain variables related to stress in the research animals.

Methods: The Authors will introduce and discuss the topic of CF as it applies to individuals who work directly with research animals (animal caregivers, veterinarians/veterinary technicians, and research faculty and staff), Institutional Animal Care and Use Committee’s (IACUC) and administrative staff. We will reflect through 1.5-2 years of surveillance data collection in relation to both the causes and impacts of CF at the University of Washington.

Results: We have found that it is important to acknowledge an individual’s feelings of grief or bereavement at the use and death of research animals, lab animal professionals may feel more validation thereby strengthening their coping mechanisms and sense of purpose ultimately reinforcing their ability to sustain or form new bonds and have a healthy productive career. Empathetic, caring lab animal professionals ensure that research animals are treated humanely and with respect while emotionally supported individuals who are caring and respectful toward research animals are best suited to promote an enriching
experience for the animals all in a work environment that can decrease stress to both humans and animals.

**Conclusion:** Compassion fatigue support and the One Health approach are essential for the sake of the research team, the animals, and maintaining the dignity of animals, research, and teaching. By learning more about the grief process and by considering how we can console others, we can find ways to improve our support system in the laboratory animal workplace. Such support will help to maintain a healthy and productive climate in the animal research environment for both humans and animals.

**Keywords:** One Health, Compassion Fatigue, Welfare

**SC11.02 - COMMUNICATING CARE WHEN YOU DON'T HAVE THE TIME**

Bernadine D. Cruz
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**Background:** Veterinary medicine is faced with a conundrum – provide good medical care, make a profit, achieve a high average ticket but maintain a low average appointment time. Multi-tasking like this can sadly make any apparently simple office call or client encounter prime targets for disasters. It takes a great investment in time, energy, and money to acquire a client but it can take only seconds to lose one. By breaking down encounters into 30-second bytes, communicating care is attainable. 30 seconds may not seem long enough to accomplish anything worthwhile but remember, “It is the little things that count.” No office call or client interaction is too short or too simple that we can’t botch it. The damage may be nothing more than an “oh well, whatever” shrug of the shoulders or it could be as serious as a client securing the services of a lawyer. According to the AVMA Liability Trust the number one reason for malpractice suits can be traced to misunderstandings and miscommunications.

**Methods:** The keys to communicating care when you don’t have the time are demonstrating respect, being heard and a sense of being respected. Jon Klingborg, DVM of California wonderfully summed up why veterinarians are typically ranked in the top 5 of the most esteemed and trusted professionals when he said...”though veterinary medicine was founded on a commitment to animals, it is our connection with people, the human-human bond that has this profession reaching new heights”.

**Conclusion:** Through establishing rapport and a healthy bond with our clients, we create a ‘caring saving account’. The higher the balance, the more we can be forgiven when we mess up, for when we need to communicate care but don’t have the time.

**Keywords:** customer service, effective communications, effective listening, open ended questions

**SC11.03 - HOW TO WALK AND TALK LIKE A WOMAN BUT BE HEARD LIKE A MAN**

Bernadine D. Cruz
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**Background:** “When a man gets up to speak, people listen...then look. When a woman gets up, people look...then if they like what they see, they listen.” (Pauline Fredericks). A woman does not need to look or act like a man to be taken seriously. She does need to project a sense of confidence in order to level the playing field. She must embody a mixture of boldness, poise and aplomb. Though the number of woman entering the field of veterinary medicine is at an all time high, the decision makers are most often men. These ‘powers brokers’ are often unaware of how their life experiences and unconscious slant on life can adversely affect women. And it is not only men that can hinder the advancement of qualified women. Women sabotage themselves with equal adroitness.

**Methods:** Personal marketing experts have found that a winning attitude, a sense of self, an understanding of others, a loyal group of friends and associates, a charming personality, the assurance to be self-promoting, the ability to negotiate to everyone’s advantage, the instincts necessary to survive, the ability to lead and a powerful presence are essential for a woman to succeed in the current workplace. These are not life skills taught in school. To be treated like a professional, you need to look and act like one. One must cultivate a powerful presence. Presence is a function of image. The impression that others respond to emotionally and intellectually. It must be an image that is backed by ethics and integrity. When a man and woman give the same speech, and all other factors are equal, the audience finds the man more credible than the woman. It may not be equitable but it is a fact. Confidence in communications is a function of word choice, tone of voice, rate of speech, thought organization, volume and gestures. Effective communications can be learned and has to be constantly reevaluated and practiced.

**Results:** At an early age, boys are praised and encouraged to speculate and take risks. Girls are counseled to work hard and to be methodical. But getting ahead for women is not a function of how hard they work. It is a by-product of networking and working with style. For any woman who wants to be in control of
her own life, she needs to develop a personal style of confidence and power.

**Conclusion:** For a woman to succeed in life she must be smart and tenacious. Those two qualities however are not enough to insure that she will command the respect, garner the raise or secure the career advancements that she deserves. Though there are now more women in the veterinary profession than men, they continue to be paid less and their path to advancement is more fraught with obstacles. By understanding attitudes regarding genders are wrought by personal, local, national, ethnic influences along with early socialization and life lessons a woman can better understand the factors influencing her personal and professional happiness and success.

**Keywords:** gender issues, communications, image, networking, self promotion

**SC11.04 - HOW TO HANDLE THE IDIOT BOSS AND OTHER IRRITATING PEOPLE AT WORK**

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**Background:** At times they just can’t be avoided...those whining, irksome, obnoxious, frustrating people that litter our lives. And when they are our bosses, co-workers, clients and family, they can drive us downright batty. By understanding the way they think, what they fear and what they really want can help in navigating life with greater success and decreased stress. Realizing how we feed into the problem will assist greater success and decreased stress. Realizing how we feed into the problem will assist understanding someone else’s reality can only be achieved with open dialogue. Such conversations are frequently uncomfortable. They may require closing your mouth, opening your ears and belly breathing. Focusing on what is good for the team and putting your feelings aside can save your sanity and possibly your job. Understanding someone else’s reality can only be achieved with open dialogue. Such conversations are frequently uncomfortable. They may require closing your mouth, opening your ears and belly breathing. Focusing on what is good for the team and putting your feelings aside can save your sanity and possibly your job.

**Methods:** Knowing how to listen to what is not being said can save your sanity and possibly your job. Understanding someone else’s reality can only be achieved with open dialogue. Such conversations are frequently uncomfortable. They may require closing your mouth, opening your ears and belly breathing. Focusing on what is good for the team and putting your feelings aside can save your sanity and possibly your job.

**Results:** Personality traits of bosses and coworkers who grate on our psyche range from dominants, pseudo-intelligentias, over-achievers to kiss ups. You are not going to change them. You should not change or compromise who you are. How you deal with difficult people is largely up to you. Changing the way you interact with others can tip the balance of life in your favor. Deciding if you want more responsibility, to take on some of your boss’ or co-worker’s duties may be an enjoyable challenge, increase your worth to the practice and make the boss happy by having one less responsibility. A history of suffering under multiple idiot bosses has the common denominator of one-you. It is possible to stop the vicious cycle by being active in the interview process, knowing what questions to ask, listening and learning about the culture of the practice before you sign on the dotted line.

**Conclusion:** As employees we seek respect, to be valued and understood. In return we expect those in authority to show integrity, leadership and commitment to us and the practice. By thinking like a boss, doing what is right before what is easy and by adopting the philosophy of not just ‘yes’ but ‘yes-and’ you will be a happier employee, one who is an integral member of any workplace.

**Keywords:** well-being, employer/employee, workplace dynamics, communications, stress

**SC11.05 - ANTHROZOOLOGY OF CUISINE - CARING OF ANIMALS, FOOD, AND HUMANS**

Bruno Beliak
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**Background:** There is no closer Human-Animal interaction than food. The most often practice of caring of animals is feeding. From streets, parks, zoos, homes, rural areas, wild forests humans have a caring need – to feed animals. Sometimes we leave food beside garbage can, we carry a cookie in our pocket when taking a dog for a walk, bring milk for the feral cats or put seeds in bird houses for the „poor“ birds. Caring in its broad meaning, with it’s ethical, empathetical principles encompasses all human states of many „other beings“ surrounding and involving human lifestyle. It’s biological structure and cultural integration play an important role in realization of health as a broader definition by WHO and OIE. Cross species empathy could play an important role for a sustainable shared lifestyle of animals and humans in anthropocene, passing disciplinary and professional boundaries. Caring is a psycho-somatic bond in humans and animals sharing mutual aspects including instinct and evading poverty. In human history caring for animals was a skill - it preserved food. Caring for animals meant better food. Animals are basic “ingredient” of almost every cuisine in the world. From field to kitchen table, human life has been unthinkable without animals. Eating involves tradition, feeding and developing habits about nourishment from early childhood. It is natural for “human animals” to eat “other” species, it is what animals do, unlike human-animal relationship that has become “overcultural” seeing animals taking many different new roles in human lives. Effects of eating animals tremendously influence our eco system. From number one public health problems, such as obesity or cardiovascular diseases, to a wider and unmeasurable footprint on our environment.

**Methods:** Empirical qualitative study examines pathways towards sustainable animal care and caring practices through qualitative interviews and participant observations. In this scientific paper I will try to answer the following research questions: Could caring for other species play an important role in modern human lifestyle? Does caring for animals mean not using animals for food? Can eating animals be a part of human sustainable eco system in anthropocene?
Results: Through different practices of food upcycling, caring practices of different civil and professional social groups involved in lives of animals can influence and form a win-win scenario for sustainable future foodways. Raising awareness in children and schooling programs makes an update towards food consuming and animal keeping that may lead food industry to a new pathway.

Conclusion: Caring of „other beings” as invisible attitude towards animals is often expressed through wide areas in human-animal relationship and can trigger and strengthen awareness of animals in society, helping transcend challenges and difficulties of mutual relationship. Diverse practices from civil society to health professionals could form a win-win situation in practical implementation of animal and human care in a broader sense. Society still does not recognize the unity of „things” between animals, food, environment and itself. For future foodways a better understanding of human-animal relationship should take place in respect to modern societies and our eco-system.

SC11.06 - ANTI-CRUELTY REGULATION IN EUROPE – A CROSS-COUNTRY EVALUATION OF EIGHTEEN EUROPEAN STATES

Sávilia Vetter
Department Of Veterinary Forensics, Law And Economics, University of Veterinary Medicine Budapest (UVMB), Budapest/HUNGARY

Background: Although the close human-animal relationship is the age of the mankind, the roots of modern animal protection regulation in Europe can only be attributed to the 19th century. The first anti-animal cruelty laws were not written to protect the inherent value of the animals, the legal subject to be protected was clearly the human society. The origins of the current European anti-cruelty regulation are intertwined with certain elements of the crime of causing public scandal and with the financial interests of the almost omnipotent owner. Over the past few decades, ethical judgment of animal torture has been increasingly emphasized, in parallel with the rise of ethical consumption and the growing differentiation of crime and sanction systems. In this process, the power of the public and the animal protection movements has been playing a prominent role, pushing the legislative bodies of European countries into new legislation.

Methods: In addition to similarities, the reasons for the differences between the rules of nations are to be found in different political and legal history, traditions and priorities. The presentation is based on a review of the constitutional and criminal law of 18 European countries in the light of animal welfare. These countries are Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Italy, Netherlands, Norway, Poland, Slovak Republic, Slovenia, Spain, Sweden and Switzerland. The following sources of law are examined in each country: constitution, civil code (if it is the source of the animals’ legal status), criminal code, and any other regulation which contains elements of animal welfare with penal sanctions.

Results: The legal status of animals, the factual elements, the perpetrator, the subject of the offense, the stages of the crime, the sanctions, and some other offenses concerning animals (animal fighting, thefts) are also examined through a deep cross-country evaluation. The accurate understanding is supported by specific and typical legal cases. At last, the possible future of animal cruelty regulation will also be mentioned, based on current trends.

Conclusion: Over the past few decades, ethical judgment of animal torture has been increasingly emphasized, in parallel with the rise of ethical consumption and the growing differentiation of crime and sanction systems. In this process, the power of the public and the animal protection movements has been playing a prominent role, pushing the legislative bodies of European countries into new legislation.

Keywords: criminal law, European countries, anti-cruelty regulation, sanctions of animal abuse, animal abuse

CLINICAL PRACTICE TRACK | COMPANION ANIMALS 1

CT3 Internal Medicine
Sunday, May 6, 2018
12:00 – 18:30

CT3.01 - PROTEINURIA: WHEN AND HOW TO INTERVENE

David Senior
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Abstract: Proteinuria refers to urinary protein excretion above that observed in normal animals. Excessive filtered protein can contribute to progression of renal tubulo-interstitial pathology and detection of increased protein in the urine of cats carries a negative prognosis of death from all causes, not just renal disease. Chronic inflammatory conditions with mild antigen excess promote development of circulating antigen-antibody complexes that deposit in the glomerular basement membrane (GBM). Alternatively, free antigens can deposit in the GBM and antibodies can bind to form the antigen-antibody complex in situ. In a small proportion of animals with glomerulonephritis and in most dogs with glomerular amyloidosis, glomerular injury and urinary protein loss is sufficient to induce hypoalbuminemia with edema and ascites, hypercholesterolemia, hyperfibrinogenemia, hypertension, and a coagulopathy due to renal loss of antithrombin II: the nephritic syndrome. Severe, unremitting glomerulonephropathy (GN) reduces GFR with eventual development of chronic kidney disease (CKD). Hypertension is frequently observed in patients with severe GN and heavy proteinuria. The urine protein/creatinine ratio (UPC) provides a quantitative estimate of 24-hour protein excretion. If proteinuria is detected in 2-3 consecutive tests, i.e., UPC > 0.5 (> 0.4 in cats), non-renal conditions known to induce proteinuria (prerenal and postrenal) should be investigated before concluding that intrinsic renal disease may be the cause of proteinuria. Documentation of persistent heavy proteinuria (UPC > 3) is consistent with GN. Conditions leading to heavy proteinuria include generalized vasculopathies, specific accumulation of antigen-antibody complexes in various locations in the glomerulus, or amyloidosis. Once GN is recognized, a diligent search for the underlying cause should be undertaken. In many instances, successful
treatment of the primary cause can eliminate or greatly ameliorate proteinuria. The nature of glomerular injury can be characterized by examination of biopsy specimens with light microscopy (H & E, silver and Congo Red stains), immunofluorescence using antibodies directed against complement and immunoglobulins, and electron microscopy. When a primary cause for GN cannot be either identified or eliminated, general strategies to reduce renal proteinuria include feeding reduced dietary protein and administration of vasoactive agents (e.g. ACE-inhibitors, angiotensin II receptor antagonists, calcium channel blockers) to reduce both intra-glomerular hydrostatic pressure and systemic blood pressure. With little or no response to standard therapy, renal biopsy and administration of immunosuppressive agents (e.g., mycophenolate) can be considered. Aspirin to prevent thrombocytopenia and (rarely) furosemide to control peripheral edema are also prescribed. Patient monitoring during treatment should include serial UPC, systemic blood pressure and renal function tests. Strategies to reduce proteinuria should aim to achieve a serum creatinine < 0.2 mg/dl (at least 50% reduction from the starting baseline value); serum albumin > 2.4 g/dl (at least 2.0 g/dl); and serum creatinine < 1.4 mg/dl (or at least stable).

**Keywords:** nephrology, glomerulonephropathy, proteinuria

**CT3.02 - INCONTINENCE: KEEPING THEM DRY**

David Senior
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**Abstract:** Accurate history is vital in the diagnosis of disorders of micturition and physical, laboratory and radiographic examination and urodynamic tests can be important. Micturition should be observed to determine whether voluntary control is present or not; whether detrusor contraction is present; and urethral relaxation normal. Palpation of the bladder and rectal palpation before and after voiding allows differentiation of a large, flaccid, atonic bladder from a small, contracted, spastic bladder. Tumors, stones, and thickening of the bladder wall and urethra can be detected. Manual expression of the bladder provides an evaluation of sphincter tone. Catheterization immediately after voiding allows determination of residual volume which in normal dogs should be 0.2-0.4 ml/kg. Urethral obstructions (strictures, tumors, uroliths) may be localized by passing a urethral catheter. A complete neurologic examination should be performed, including cystometry and cystoscopy which anatomic and functional integrity of the bladder. The presence of gross blood will require urinalysis to determine whether a primary cause for dysuria is present. Urinalysis should include a determination of the pH, protein, blood, and an assessment of the specific gravity. A bacteriologic study should be performed if there is evidence of urinary tract infection.

**Keywords:** urology, incontinence

**CT3.03 - DIAGNOSIS AND MANAGEMENT OF OESOPHAGUS DISEASES IN DOGS**

Albert Lloret
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**Abstract:** Esophageal diseases are frequent in dogs and regurgitation is the most frequent clinical sign associated. Dysphagia, ptyalism, weight loss, vomiting and even coughing maybe also present in some cases. Any esophageal disease (obstructive, inflammatory, neoplastic, neuromuscular) may produce segmental or diffuse motility and typical clinical signs, including aspiration pneumonia. Megaesophagus and esophageal hypomotility is a common cause of regurgitation in dogs which maybe congenital or acquired. Simple radiology of the neck and thorax are diagnostic in most cases, but contrast radiography or fluoroscopy can be considered as well. Congenital megaesophagus presents with regurgitation after weaning and failure to thrive. Some breeds are predisposed and hereditary transmission has been shown in some. Treatment is supportive and symptomatic, but in some dogs prognosis is good as motilith function improves over months. Pathogenesis is probably associated to a defect in vagal afferent esophageal inervation. Acquired megaesophagus (AM) may be...
secondary to other diseases or primary idiopathic. Causes of secondary AM may be endocrine diseases (hypoadrenocorticism, hypothyroidism), immune-mediated diseases (myasthenia gravis, lupus, polymyopathies, polynuropathies), inflammatory (severe esophagealitis), toxic (lead poisoning) and unknown (dysautonomia in cats). Complete and systematic diagnostic work-up should be made in cases of AM to confirm or rule out treatable causes, like hypoadrenocorticism (ACTH test) or myasthenia gravis (ACHR antibody filter), in which esophageal dismotility can return to normal after correct treatment so the prognosis is favorable. Idiopathic or primary AM is diagnosed when a secondary cause is not found after all the diagnostic work-up which may include esophagoscopy and more specific neurologic tests (electromyography, muscle and nerve biopsies, MRI) in some patients. Treatment of idiopathic AM is mainly supportive and symptomatic. Most important measure is small frequent meals from an upright position to avoid retention in the esophagus. Bailey char is has been specifically designed for this goal. The main goal is to assure correct nutrition and preventing aspiration pneumonia which is a frequent morbidity in these patients and even a cause of mortality. Broad-spectrum antibiotics should be given in case of aspiration pneumonia. Placement of a temporary or permanent gastrostomy tube feeding can be considered in some dogs with severe signs and/or malnutrition and/or recurrent pneumonia, but the risk of aspiration still exists due to saliva or refluxed gastric content aspiration. Prokinetic drugs (cisapride, metoclopramide, others) have been evaluated, but so far no clinical benefits have been shown in dogs. It is likely that they don't work because esophageal muscle is striated in dogs, but might work in cats with distal esophageal smooth muscle dismotility. A recent study has found some clinical benefits using sildenafil in dogs with congenital megaesophagus. Smooth muscle relaxation and decreased lower esophageal sphincter tone would promote a faster and better voiding of the esophageal body ameliorating clinical signs and radiographic abnormalities. So far, it is unknown if some benefits could be expected in idiopathic AM using sildenafil. Prognosis in dogs with idiopathic AM is poor and most of them die of recurrent pneumonia and/or difficult management and lack of improvement.

Keywords: Megaesophagus, congenital, myasthenia gravis, dismotility, aspiration pneumonia

CT3.04 - MANAGING PROSTATIC DISEASES IN DOGS

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No abstract available.

CT3.05 - FELINE LEISHMANIOSIS

Albert Lloret
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Abstract: Feline leishmaniosi is less known that the disease in dogs and humans. Traditionally, cats have been considered resistant to infection and disease, and only sporadic rare cases have been reported. However, we currently know that prevalence of infection is high in endemic areas and some cats show clinical manifestations of the disease which might be unrecognized by clinicians who not have the disease included in their list of differentials. Cats are infected by the same Leishmania species that dogs and humans in respective endemic areas; L infantum in the Mediterranean basin (also Iran and Brazil), L mexicana (Texas US), L braziliensis & L amazonensis (Brazil) and L venezuelensis (Venezuela). Life cycle and transmission is assumed to be identical as in the dog, although there are no specific studies in the cat. Several epidemiological studies in cats have shown that the prevalence of infection is high in endemic areas. Cats are more resistant to infection than dogs, as epidemiological data and few experimental infection studies have shown. However, clinical presentation in cats shows significant differences compared to dog. Skin lesions are the most frequent clinical problem, mainly presenting as dermal or skin nodules and/or ulcers (head and neck more frequent than trunk and legs). Local or generalized lymphadenopathy may be frequent, but not invariably present. Ocular disease is the second most frequent manifestations. Granulomatous lesions with presence of parasites in all ocular layers have been reported. Visceral involvement and associated systemic signs are seen in 30 to more than 50% of the cats. Including non specific signs, hematologic abnormalities, splenomegaly, renal involvement, hepatic involvement, and respiratory problems. Leishmaniosi in cats has been often diagnosed in cats suffering immunosuppressive conditions, but also immunocompetent cats that responded well to the treatment. In most cats diagnosis is initially suspected or confirmed by parasite visualization in skin and/or ocular nodular or ulcerative lesions after cytology and/or histology. Serology (IFA and ELISA) is also useful for diagnosis, as cats with clinical signs usually have high anti-leishmania antibody titers coupled with hypergammaglobulinemia. If antibody titers are positive we should confirm the diagnosis by detection of the parasite, either in bone marrow or lymph node cytology or PCR. No prospective studies or large series of cases have been reported, so all the data about feline leishmaniosi treatment and prognosis is based in case reports or retrospective studies in low numbers of cats. Long-term allopurinol (10 to 20 mg/kg q 12-24h) has been the most frequent treatment reported. Meglumine antimoniate (5 to 50 mg/kg or 375 mg/cat c24h SC) has been used in some cats with a good outcome too. Prognosis is variable: maybe good in cats with skin and external ocular lesions with no immunosuppressive conditions, but very poor in cats with renal disease and/or retroviral infection.

Keyword: Feline Leishmaniosis Diagnosis Phlebotomus Treatment

CT3 Dermatology
Sunday, May 6, 2018
09:00 – 17:00

CT3.06 - DIAGNOSTIC APPROACH TO THE PRURITIC CAT

Chiara Noli
Servizi Dermatologici Veterinari, PEVERAGNO/ITALY
Abstract: The main cause of pruritus in cats are allergies, and among these the most frequent ones are flea bite allergy, food allergy and allergy to environmental antigens (feline atopic dermatitis). The most frequent clinical signs of allergy in cats are facial pruritus, self-inflicted alopecia, miliary dermatitis, eosinophilic plaque and eosinophilic granuloma. There are several problems in the approach to allergic skin diseases in cats. The first is that it is difficult per se to make an unequivocal diagnosis of allergy in this species, the reason being, that allergies have not yet been well defined in cats. In dogs atopic dermatitis has been recognized and well described both clinically and immunologically, whereas in cats research is just at a very early stage. Clinical manifestations of allergy in cats are not as site-specific as in dogs, e.g. a cat scratching on the neck may have a flea allergy as well as food allergy, or a cat licking on its belly may have a flea allergy, food allergy or atopic dermatitis. To make things even more complicated, in cats there are some clinical manifestations of allergy which may be due to other causes. For example a “bold belly” may have a fungal infection, as a linear granuloma may be associated to food allergy or may be hereditary or idiopathic. The correct approach to a pruritic cat involves firstly the elimination of parasites with a systemic parasiticide, such as selamectin or furalaner. The identification and treatment of secondary bacterial and/or yeast infection, if present. Should the pruritus persist after the elimination of skin parasites and infection, then one should proceed to a dietary elimination trial, using protein and carbohydrate sources which the patient has never encountered, to diagnose food allergy. This should be rigidly enforced, preferably using a home cooked or a commercial hyalurysed diet, for 8 weeks. If the food trial is negative or if the cat /owner refuses to participate, the clinician can proceed with the hypothesis that the cat may be suffering from environmental allergy. Intradermal skin testing or serum IgE testing may indicate the allergens responsible for the reaction, but should not be used to diagnose atopic dermatitis. If the test results are positive, hypsensitizerization can be undertaken with the appropriate allergens. Should the owner be unwilling to proceed with this course of action then the only remaining option is symptomatic control.

CT3.07
NEW TREATMENTS FOR CANINE ATOPIC DERMATITIS
Chiara Noli
Dermatology, Servizi Dermatologici Veterinari,
Peveragno/ITALY

Abstract: Canine atopic dermatitis (cAD) is a chronic disease. The clinician must make the client understand that unless the offending allergen(s) are identified and removed a cure is not possible. The keys to the successful management of atopic dermatitis are client education and a combination of aetologic, symptomatic, topical, antimicrobial and nutritional therapy. Immunotherapy is the aetologic treatment of choice in cases where the duration of pruritus is more than four months of the year. Allergens are administered by subcutaneous injection, and recently sublingual and intranodal allergen administration has also been described with similar efficacy. Good to very good responses are achieved in 50-80% of dogs treated. Glucocorticoids are very effective in suppressing the symptoms of atopic dermatitis. Unfortunately, corticosteroids have diverse and profound side effects, such as polydipsia and polyuria, induction of liver enzymes, muscle atrophy and increased susceptibility to skin and bladder infections. For this reason, recently safer alternatives have been developed and released on the market. Oclacitinib is a JAK inhibitor which was released on the market three years ago, able to block intracellular metabolic pathways leading to the allergic activation of inflammatory cells and keratinocytes and to the elicitation of pruritus in neural fibres. If given by mouth at the dose of 0.4-0.6 mg/kg once or twice daily it is able to block pruritus within 2 hours and for about one day. Lokivetmab is a caninised anti-IL-31 (the most important pruritogenic cytokine) monoclonal antibody, that, if injected subcutaneously at the dose of 1-3.3mg/kg is able to decrease pruritus for about 4 weeks. Contrary to glucocorticoids, with both oclacitinib and lokivetmab dogs can be tested in vivo with intradermal allergy skin tests. Topical therapies have recently found an important place in the long-term management of canine atopic dermatitis. Hydrocortisone aceponate (Cortavance, Virbac) topical spray is useful to treat localized pruritus and reduce the need for systemic medication. New guidelines advise to use it proactively, that is to administer it on a regular basis even if there are no visible lesions or pruritus, in order to prevent disease relapses and progression and keep skin inflammation at a minimum level. Recently topical spot-on barrier restorers containing polyunsaturated fatty acids and lipid barrier components, such as ceramides and phytosphingosine have been released on the market with the aim to normalise the epidermal barrier defects typical of the atopic skin. Lastly, in order to lower the bacterial load responsible for the frequent superficial pyoderma observed in allergic dogs, regular topical disinfectants such as chlorine baths or chlorhexidine shampoos or sprays are advised, as an effective mean to kill bacteria without fostering bacterial resistance.

CT3.08 - CLINICAL APPROACH TO CANINE ALOPECIA
Manon Paradis
Department Of Clinical Sciences, University of Montreal, Faculty of Veterinary Medicine, Saint Hyacinthe/CANADA

Abstract: Causes of alopecia are numerous in dogs and include infections (e.g., dermatophytes, demodiosis, bacterial folliculitis, leishmaniosis), self-inflicted hair loss (from hypersensitivities or parasites), immune-mediated diseases (sebaceous adenitis, dermatomyositis, alopecia areata, etc.) endocrinopathies, follicular dysplasias, etc. The clinician must adopt a methodical clinical approach to canine alopecia in order to obtain the proper diagnosis. Since alopecia may be a feature of a myriad of skin diseases, a complete history should be taken and a thorough a general physical examination should be conducted to detect any abnormality present in other organs. This should be followed by a meticulous examination of hair coat and skin. Presence of primary or secondary skin lesions (e.g., papules, pustules, scaling, crusts), follicular casts (e.g., in demodiosis and sebaceous adenitis), skin thickness, aspect of hair shafts (broken or not) are some of the findings that can be very helpful to orient toward more specific diagnoses. Erythema, papules, pustules, lichenification, self-trauma (recognized by broken hairs and excoriations) are all suggestive of an inflammatory process and pruritus. Thinning of the skin with prominent subcutaneous vessels and calcinosis cutis are pathognomonic of
hyperadrenocorticism, whereas hypothyroidism is often accompanied by thickened and hyperpigmented skin without inflammation, unless a secondary bacterial infection is present. In canine recurrent flank alopecia, the alopecic areas are typically well demarcated and hyperpigmented. If pruritus is present, it should be investigated first. If pruritus is absent, one should determine whether the pattern of hair loss is focal or symmetric and diffuse. Skin scrapings, trichoscopy, skin cytology, Wood’s lamp examination and/or dermatophyte cultures are often indicated if inflammation and/or papules and pustules are present. If pruritus, inflammation or any other primary lesions are absent, the next most pertinent diagnostic procedure to perform will be influenced by age of onset, breed and sexual status. These should be selected according to the index of suspicion. Hematology, biochemistry and urine analysis may be useful to evaluate the general health status of adult dogs with an alopecic condition or if a systemic disease, which may lead to alopecia, is suspected. Hormonal tests (e.g., thyroid hormone profile, ACTH stimulation test) should be carried out if the clinical signs and results of blood or urinalysis suggest an endocrinopathy. In contrast, skin biopsies may be the initial and unique diagnostic procedure performed if immune-mediated alopecias such as sebaceous adenitis is strongly suspected.

CT3.09 - ALOPECIA X AND OTHER FOLLICULAR DYSPLASIAS

Manon Paradis
Department Of Clinical Sciences, University of Montreal, Faculty of Veterinary Medicine, Saint-Hyacinthe/CANADA

Abstract: Follicular dysplasias encompass a group of genetic acquired non-inflammatory dermatological disorders resulting in hair loss and altered coat quality. They include many ill-defined alopecic disorders that are either coat colour-linked (e.g., colour dilution alopecia, black hair follicular dysplasia) or non-coat colour-linked (e.g., canine recurrent flank alopecia, alopecia X and the various breed associated follicular dysplasias). Alopecia X is mainly seen in Nordic and “plush-coated” breeds (e.g., Samoyed, Alaskan malamute, Pomeranian, chow chow, and keeshond) and miniature poodles. Although several names and hypotheses have been proposed in the past, the pathomechanism of this disease is unknown. This condition occurs in both sexes regardless of neutering status, and generally in adult dogs. The initial clinical sign is a progressive loss of hair in frictional areas (around the neck, tail, caudal thighs and perineum). Gradually, the alopecia establishes in the truncal region and eventually the exposed skin may become hyperpigmented, mimicking some endocrine alopecias. Usually, head and legs are spared. The breed affected, the history related to the clinical course of the alopecia, and the physical findings are considered important indicators that lead to suspect of alopecia X. However, diagnosis is normally obtained by exclusion of other alopecic disorders. Endocrinopathies that can cause hair cycle arrest (e.g., hypothyroidism, hyperadrenocorticism, and reproductive hormone disorders), sebaceous adenitis, telogen effluvium, and other follicular dysplasias should be ruled out. Laboratory tests as serum biochemical profiles, CBC, urinalysis, thyroid and adrenal function may be required to rule out other differentials. Once systemic abnormalities have been excluded, skin biopsies are generally recommended and can be useful to support the diagnosis and exclude other diagnoses such as sebaceous adenitis. Histopathology generally reveals nonspecific changes of endocrinopathies and often cannot differentiate alopecia X from other endocrine diseases. However, the presence of excessive intrafollicular keratination (flame follicles) is suggestive of this disorder. Several treatment modalities have been proposed such as castration, melaton, trilostane, mitotane, desloreline) with variable outcome. Colour dilution alopecia, is an uncommon inherited disorder which causes alopecia in some dogs with diluted (e.g., blue or fawn) hair coats. First clinical signs may be noticed as early as 3 months of age. Affected dogs show a progressive alopecia, scaling and comedones, and sometime secondary bacterial folliculitis, affecting only the dilute areas of the hair coat. Black hair follicular dysplasia is a rare disorder of early onset in which dogs loose hairs exclusively in the black areas of their hair coat. Canine recurrent flank alopecia is characterized by episodes of a fairly abrupt onset of non-scarring alopecia, usually bilaetral and symmetric with well-demarcated borders and often markedly hyperpigmented alopecic skin that often reoccur on a yearly basis. The alopecia is usually confined to the thoracolumbar region and spontaneous regrowth of a normal pelage usually occurs in 3 to 8 months.

CT3.10 - IMMUNE-MEDIATED ALOPECIA

Manon Paradis
Department Of Clinical Sciences, University of Montreal, Faculty of Veterinary Medicine, Saint-Hyacinthe/CANADA

Abstract: There are several immune-mediated dermatopathies causing alopecia in dogs. These include sebaceous adenitis, dermatomyositis, post-rabies vaccine alopecia, adult onset generalized ischemic dermatopathy, alopecia areata (pelade) and ithemic lymphocytic mural folliculitis (pseudopelade). Sebaceous adenitis is an uncommon idiopathic skin disease in the dog, most commonly seen in standard poodles and Akitas. Young adult to middle-aged dogs are most commonly affected. Clinical presentation is quite variable depending on individual breeds and severity. Follicular casts (white scales adherent to hair shafts) is a common feature. In standard poodles, the disease starts most often on the dorsal muzzle and temporal region, spreading to the dorsal neck and thorax, whereas in Akitas the alopecia is typically more extensive. Broken hair shafts, dull and brittle hair coat, excessive scaling, change in hair colour, and musty odour may be seen. Pruritus is variable but may be marked, especially if secondary bacterial or yeast infection is present. Diagnosis is confirmed with skin biopsies. Treatment consists of topical oil soaks or humectants (propylene glycol 50-75%) and shampoos and/or oral cyclosporine. Canine dermatomyositis is a hereditary, idiopathic inflammatory skin and muscle disease well-characterized in Collies and Sheltland Sheepdogs. Clinical signs are usually first noticed in dogs less than 6 months, and as early as 7 weeks of age. They wax and wane, and vary from minor skin lesions (patchy alopecia, rarely vesicles) to severe ulceration of the skin, with a generalized debilitating myositis affecting the head and distal limbs. Skin lesions consists in alopecia, erosions and crusts around the eyes, on the bridge of the nose, pinnae, bony prominences (elbows, hocks, digits), and the tail tip. Some dogs also present with

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onychodystrophy. Pruritus is normally absent. Many dogs show some degree of skeletal muscle involvement (from subtle atrophy of temporal and masseter muscle to generalized muscular atrophy with megaesophagus and lameness). Diagnosis is confirmed by skin biopsies. Various treatment modalities can be considered such as oral prednisone, pentoxifylline or cyclosporine and topical tacrolimus. Flares can be minimized by avoidance of sunlight. Post-rabies vaccine alopecia is a localized or rarely generalized ischemic vasculopathy that results from rabies vaccine administration. It is usually seen in adult dogs of small breeds. The onset of clinical signs is typically 2 to 3 months after vaccine administration, and consists in a circular erythematous alopecic lesion at the site of injection (shoulders, back or the posterolateral thighs), but occasionally can be widespread. Old lesions often have a shiny appearance with mild scaling. Diagnosis is confirmed by skin biopsies. If inflammation is prominent, short course of glucocorticoids may be used possibly combined with pentoxifylline and vitamin E. Alopecia areata (Pelade) is rare in dogs and is characterized by a spontaneously arising and well-demarcated alopecic patches developing first on the head (muzzle, chin, forehead, peri-ocular, ears) and occasionally on the legs. Spontaneous and complete hair regrowth occurred in many dogs. Such regrowth is commonly of white hair. Skin biopsies are required to confirm the diagnosis. Oral cyclosporine administration appears effective.

CT3.11 - Canine Hepatocutaneous Syndrome
Lluis Ferrer
Cummings School of Veterinary Medicine, Tufts University, Department of Clinical Sciences, North Grafton/UNITED STATES OF AMERICA

No abstract available.

CT3 Internal Medicine
Tuesday, May 8, 2018
09:00 – 17:00

CT3.12 – FEVER OF UNKNOWN ORIGIN: HOW TO APPROACH THE DIAGNOSIS
Michael Lappin
Department of Clinical Sciences, Veterinary Teaching Hospital, Colorado State University, Fort Collins/UNITED STATES OF AMERICA

No abstract available.

CT3.13 - Feline Zoonosis and Safe Ownership
Michael Lappin
Department of Clinical Sciences, Veterinary Teaching Hospital, Colorado State University, Fort Collins/UNITED STATES OF AMERICA

No abstract available.
CT3.15 - THERAPEUTIC APPROACH ON VIRUS INFECTIONS: WHAT IS WORKING

Katrin Hartmann
Lmu Munich, Clinic of Small Animal Medicine, Munich/GERMANY

Abstract: Therapeutic approach on virus infections: what is working? The use of antiviral drugs is uncommon in veterinary medicine, and the number of controlled studies of the efficacy of these drugs is limited. Complete elimination of infectious agents is usually not achieved, mainly because viruses are inhibited only during their replicative cycle and not susceptible during latency. Antiviral drugs also affect the function of host cell machinery, so they have considerable potential for toxicity. Antiviral drugs are widely used in human medicine for treatment of human immunodeficiency virus (HIV), herpesvirus, and other viral infections. Much less is known about antivirals in cats and dogs, and there are few diseases for which efficacy has been proven. Most antivirals are available for treatment of feline and canine viral infections are nucleoside analogues with greatest activity against retroviruses and herpesviruses. With the exception of feline interferon-α (IFN-α), no antiviral drugs are licensed for use in dogs and cats. Immunomodulators are also referred to as biologic response modifiers. Their use for treatment of infectious diseases is potential to be beneficial when compromise of the immune system impairs effective antimicrobial drug treatment. Some immunomodulators not only affect the immune system, but also possess true antiviral activity (e.g. IFN-α). In a broader sense, immunomodulators also include drugs that are used to dampen an excessive host inflammatory response, such as glucocorticoids, e.g. used to treat cats with feline infectious peritonitis (FIP). In addition, specific antibodies directed against cytokines, such as against feline tumor necrosis factor-α, have been developed and might be beneficial for cats with FIP. Probiotics also have immunomodulatory activity and have been used to treat virus, e.g. feline herpesvirus-1 (FHV-1), infections. Specific neutralizing antibodies (passive immunization), such as against feline calicivirus (FCV), panleukopenia virus (FPV), canine parvovirus (CPV), canine distemper virus (CDV), and infectious canine hepatitis (ICH) virus, are also used for treatment with variable results. Vaccines, such as intranasal vaccines, also can act as therapeutic immunomodulators. Treatment of canine and feline viral infections with immunomodulators has yielded disappointing results; data from large, prospective, controlled clinical trials are lacking. Interferons (IFNs) bind to specific cell surface receptors and stimulate expression of proteins that can interfere with various stages of viral replication. Commercially available recombinant IFNs that are mostly used in cats and dogs include human IFN-α and feline IFN-ω. IFN-ω is licensed for use in cats and dogs in Europe, Asia, and Australia. No severe adverse effects of IFN-ω treatment have been reported in cats and dogs. IFN-ω has been used for treatment of viral infections in cats and dogs with variable success. It has been proven to improve clinical signs and reduce mortality in dogs with CPV infection. Some studies demonstrated clinical improvement in cats with FIV or feline leukemia virus (FeLV) infection, but there was no change in viremia and cytokine concentrations suggesting that the clinical improvement resulted from an effect of IFN-ω on secondary infections rather than on the retrovirus infection. So far, prove of efficacy is lacking for many virus infections.

CT3.16 – DIAGNOSIS AND MANAGEMENT OF FELINE RESPIRATORY INFECTIONS

Michael Lappin
Department of Clinical Sciences, Veterinary Teaching Hospital, Colorado State University, Fort Collins/UNITED STATES OF AMERICA

No abstract available.

CT3.17 – CANINE AND FELINE GIARDIA

Michael Lappin
Department of Clinical Sciences, Veterinary Teaching Hospital, Colorado State University, Fort Collins/UNITED STATES OF AMERICA

No abstract available.

608 - SYNTHETIC PYRETHROIDS IN PET ANIMALS

Jose-Luis Rodriguez, Bernardo Lopez-Torres, Irma Ares, Marta Martinez, Maria-Aranzazu Martinez, Maria-Rosa Martinez-Larrañaga, Arturo Anadón Dept. Pharmacology and Toxicology, Universidad Complutense de Madrid, Madrid/SPAIN

Background: Pyrethroids are used in veterinary medicine as insecticides and acaricides to control fleas, mite, lice, and ticks between other insect infestations. The voltage-dependent sodium channel in nerve membrane is the common target in insects and mammals. This work summarises use and toxicity of pyrethroids in companion animals.

Methods: Pyrethroids used in dogs and cats: Permethrin, formulations include collar (0.8-1.5%), topical concentrate (spot-on), spray (0.2-1%), shampoo (1%), dip, or cream rinse. Tetramethrin with permethrin to kill cockroaches and fleas in pet sleeping areas. Tetramethrin used in dogs as solution (0.6%) and shampoo (0.2%). Other pyrethroids: cyfluthrin, cypermethrin (solution, 5%), deltamethrin (collar, 4-4.5%), fenvalerate (solution 6%), flumethrin (collar, 4%), and phenthothin (shampoo, 0.25%). Flumethrin (4.5%) in combination with imidacloprid (10%) as insecticidal, acaricidal and repellent in collars for dogs (from 7 weeks old) and cats (from 10 weeks old), effective combination against fleas (Ctenocephalides felis and canis) and Pulex irritans of dogs and cats, ticks of dogs and cats and for treatment of biting/chewing lice (Trichodectes canis) infestation dogs.

Results: Toxicity in pet animals. Dermal shampoos, spot-on type products, and collars containing insecticidal ingredients for control of fleas and ticks are habitual on household pets. Cats are particularly sensitive to pyrethroid toxic effects as they have low ability to conjugate these compounds through glucuronide conjugation. The main poisoning circumstances are excessive use of flea control sprays or dips which lead to overdosed dermal exposure or accidental ingestion. Clinical signs in cats includes in pet animals. Toxicity clinical signs in dogs and cats include salivation, vomiting, hyperexcitability, hypothermia, tremor and seizures, dyspnea, prostration, and death. The signs begin within minutes to hours (24-72 h) of exposure and last 2-3 days. Hypersalivation, depression, vomiting, anorexia and even death may be seen. Hyperexcitability, tremors, or
Conclusion: Supportive therapy include initial respiratory and cardiovascular function assessment. The patient is stabilized if hypothermia or hyperthermia is present. There is no specific antidote but fluid therapy and drugs to control seizures are indicated. Seizures represent the most complication and may result in irreversible brain damage or death from hyperthermia, lactic acidosis and shock or, especially, hypoxia. The muscle relaxants with depressant action on spinal polysynaptic interneurons help to antagonize pyrethroid toxicosis but refractory seizures may require the use of benzodiazepines (diazepam, midazolam, or zolazepam), barbiturates (pentobarbital, phenobarbitol) or propofol. Seizure activity is treated with IV diazepam (cats: 0.2–1.0 mg/kg; dogs: 0.2–2.0 mg/kg), propofol (initial dose 1 mg/kg, then constant rate infusion 0.1 mg/kg/min for 1–2 days), phenobarbital (1.5–5.0 mg/kg) or metharbamicol (longer-lasting mephenesin derivative) at dose of 44–220 mg/kg IV. Hypersalivation is controlled with atropine sulfate at dose of 0.02–0.04 mg/kg IM or SC but care should be taken to avoid excessive atropine administration, which can result in CNS stimulation and tachycardia. Propranolol, procainamide, tetracaine and lidocaine for tremors, and ivermectin and pentobarbital for choreoathetosis, have been used on the basis of experimental effects, although there are insufficient clinical data to advocate a therapeutic role.

**SC7 Short Communications 7**

**Monday, May 7, 2018**

**17:00 – 18:00**

**SC7.01 - A COMPARATIVE STUDY BETWEEN FINE NEEDLE ASPIRATION CYTOLOGY (FNAC) AND HISTOPATHOLOGY FOR THE DIAGNOSIS OF CANINE PERIANAL GLAND TUMORS**

Nihat Yumusak¹, Murat Caliskan², Osman Kutsal³
¹Institute Of Health Sciences, University of Harran, Şanlıurfa/TURKEY, ²Department Of Surgery, Faculty of Veterinary Medicine, University of Ankara, Ankara/TURKEY, ³Department Of Pathology, Faculty of Veterinary Medicine, University of Ankara, Ankara/TURKEY

Background: Although cytological research is consulted widely in human medicine, it has not found common use yet in the field of veterinary medicine. Cytology is a diagnostic procedure to evaluate superficial masses in animals, but there is few studies regarding this comparison involving canine perianal gland masses.

Methods: The study material comprised samples taken from 32 dogs of different breed, sex and age. Cytological samples were obtained by the fine needle aspiration biopsy (FNAB) technique. On the other hand, histopathologic tissue samples were obtained by surgical biopsy.

Results: Of the 32 dogs included in the study, in 84.37% of the samples taken, 70.37% were diagnosed as Suspect perianal gland adenoma, 18.52% as Suspect perianal gland carcinoma and 11.1% as Suspect perianal gland epithelioma. Based on histopathological examination, of the total 32 cases, 75% were diagnosed as Perianal gland adenoma, 15.6% as Perianal gland carcinoma and 9.4% as Perianal gland epithelioma.

Conclusion: It was concluded that the FNAB technique and cytological examination could be of use in the early diagnosis of canine perianal gland tumors.

Keywords: fine-needle aspiration, histopathology, perianal gland tumor, Cytology, dog

**SC7.02 - IMMUNOHISTOCHEMICAL EXPRESSION OF CANINE SKIN AND SKIN ADNEXAL TUMORS**

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¹Institute Of Health Sciences, University of Harran, Şanlıurfa/TURKEY, ²Department Of Surgery, Faculty of Veterinary Medicine, University of Ankara, Ankara/TURKEY, ³Department Of Pathology, Faculty of Veterinary Medicine, University of Ankara, Ankara/TURKEY

Background: Skin and skin adnexal tumors are very common in dogs. Skin tumors have a complex histological appearance and sometimes pathological diagnoses is difficult. In this study, canine skin and skin adnexal tumors were investigated with histomorphologically and immunochemically by different antibodies.

Methods: The tumour samples were obtained from 56 dogs. All the specimens were after the routin processed stained with haematoxylin-eosin. Then, tissue sections intended for the detection immunohistochemistry with MNF116, Glial Fibrillary Acidic Protein (GFAP), S-100 protein (S-100), Vimentin (VIM), Antineuron Specific Enolase (NSE), α-Smooth Muscle Actin (α-SMA), Factor FVIII (FVIII), Ki67, CD18 and CD79. The tumors were classified morphologically according to the WHO criteria.

Results: The tumors included 15 squamous cell carcinoma (SCC), 13 hepatoid gland tumors (HGT), 10 basal cell carcinoma (BCC), 8 sweat gland tumors, 7 sebaseöz gland tumors and 3 trichoepitheliomas. All the tumors with adnexal differentiation showed positive reactivity for cytokeratins MNF116. Nevertheless, all tumors were negative for VIM and α-SMA. NSE immunoreactivity was clearly demonstrated in follicular tumors, whereas hepatoid gland tumors showed a local diffuse positive. Immunoreactivity with GFAP was observed locally in sebaceous, HGT and sweat gland tumors, while S-100 protein reactivity was found sebaseöz gland tumors, sweat gland tumors and HGT. Immunoreactivity for FVIII was observed in HGT and trichoepitheliomas. SCC, BCC, trichoepitheliomas, sweat gland tumors and sebaseöz gland tumors were positive with Ki67 and NSE. Sebaseöz gland tumors, sweat gland tumors and HGT were immunoreactive with CD79. And also, sweat gland tumors and HGT were immunoreactive with CD18.

Conclusion: The canine skin tumors can be diagnoses after a conventional histological staining. For the evaluation of canine skin tumors differentiation, it must use different types of antibodies, which is especially sensitive only for canine skin tumors.
Keywords: Immunohistochemistry, Skin tumors, dog, Pathology

SC7.03 - CLINICAL STUDY OF PCSO-524 (ANTINOLä) AS NEUTRACEUTICAL IN CANINE ALLERGIC SKIN DISEASE

Chaiyot Tanrattana1, Sivavat Ch. Panitarnang12, Warawadee ModGasatsathorn1
1Veterinary Medicine, Chulalongkorn University, Bangkok/THAILAND, 2Small Animal Hospital, Chulalongkorn University, Bangkok/THAILAND

Background: Allergic skin diseases are common problems in veterinary dermatology practice which require a systematic approach and multimodal therapy for effective management. Several drugs have been used for the management of allergic dermatitis according to its anti-inflammatory effects. The objective of this study is to study beneficial effects of PCSO-524, an extract from New Zealand green-lipped mussel, in canine allergic skin diseases.

Methods: 31 allergic dogs with chronic pruritus and other skin diseases ruled out were included in this study. Dogs were classified into 3 treatment groups based on a degree of pruritus, distribution, extension of the lesions and skin and coat condition (group 1=mild, group 2=moderate and group 3=severe). All dogs received PCSO-524 of loading dose for 2 weeks (1 capsule/10 kg twice a day) followed by maintenance dose throughout the experiment (1 capsule/10 kg once a day). All dogs were evaluated at 2, 4, 8, 12 and 16 weeks for a clinical response, assessment by owners (pvas score) and veterinarians (CADESI-03 score).

Results: showed that PCSO-524 had beneficial effects on improvement of skin and coat condition and reduction in pvas score of group 1. Similarly, veterinarian evaluation revealed greater reduction in pruritic score in group 1 (50%) with less effects in group 2 (44.4%) and 3 (40%).

Conclusion: In conclusion, PCSO-524 had beneficial effects in mild but not more severe atopic dogs. This is possibly due to more severe of inflammation and multifactorial factors which cannot manage successfully. However, PCSO-524 may be used as an alternative omega 3 for the treatment of canine atopic dermatitis

Keywords: neutraceutical, allergic skin disease, dogs, PCSO-524

SC7.04 - EVALUATION OF SUBCUTANEOUS INFILTRATION OF AUTOLOGOUS PLATELET-RICH PLASMA ON SKIN-WOUND HEALING IN DOGS

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Background: Platelet-rich plasma (PRP) is known to be rich in growth factors and cytokines, which are crucial to the healing process. This study investigate the effect of subcutaneous (S/C) infiltration of autologous PRP at the wound boundaries on wound epithelization and contraction.

Methods: Five adult male mongrel dogs were used. Bilateral acute full thickness skin wounds (3 cm diameter) were created on the thorax symmetrically. Right side wounds were subcutaneously infiltrated with activated PRP at day 0 and then every week for three consecutive weeks. The left wound was left as control. Wound contraction and epithelization were clinically evaluated. Expression of collagen type I (COLI) A2, (COU2A),histopathology and immunohistochemical (IHC) staining of COLI a1 (COLIA1) were performed on skin biopsies at first, second and third weeks. The catalase activity, malondialdehyde (MDA) concentration and matrix metalloproteinase (MMP) 9 (MMP-9) activity were assessed in wound fluid samples. All data were analysed statistically.

Results: The epithelization percent significantly increased in the PRP-treated wound at week 3. Collagen was well organized in the PRP-treated wounds compared with control wounds at week 3. The COLA2 expression and intensity of COLA1 significantly increased in PRP-treated wounds. MDA concentration was significantly decreased in PRP-treated wound at week 3. The catalase activity exhibited no difference between PRP treated and untreated wounds. The activity of MMP-9 reached its peak at the second week and was significantly high in the PRP-treated group.

Conclusion: S/C infiltration of autologous PRP at the wound margins enhances the wound epithelization and reduces the scar tissue formation.

SC7.05 - IS CHOOSING AN APPROPRIATE CANINE BLOOD DONOR EASY?

Paulina Kopeć1, Sandra Gładysz1, Katarzyna Zondełek1, Andrzej Milczak2, Beata Abramowicz2, Diana Bochyńska1
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Background: Karl Landsteiner’s ABO blood groups discovery has led to the development of rational haemotherapy treatments. Even though, numerous side
Effects of blood-transfusions have been reported, many new threats are being recognised. Despite the significant progress of transfusion-medicine, the level of veterinary transfusiology is still not satisfying. Choosing a donor is still based solely on the presence or absence of the DEA 1.1 antigen, and simplified versions of human cross-match tests. In case of anaemia due to babesiosis or autoimmune haemolytic anaemia (AIHA) it seems that the safety of blood transfusions depends on fully phenotypic compatibility between the donor and recipient. The aim of this study was to evaluate the probability of finding suitable donors for dogs which needed blood transfusions due to anaemia, caused by Babesia canis infection.

**Methods:** Blood samples were taken from 20 police German Shepherd Dogs, living in an area where babesiosis is endemic. The presence of DEA 1.1 in EDTA blood samples was detected using a quick immunochromatographic test. In addition the donor-recipient compatibility test was performed in 9 cases using a test tube method, which was a modification of the procedure proposed by the Association of Veterinary Hematology and Transfusion Medicine (AVHTM).

**Results:** The presence of DEA 1.1 antigen was demonstrated in 3 males (15%). The remaining 17 animals (85%), were DEA 1.1 negative. A clear, macroscopically visible agglutination did not occur in any of the tests. Massive haemolysis was not observed either, but weak agglutination reactions, confirmed by a microscopic examination, were found among 10 pairs of dogs.

**Conclusion:** Presence of weak agglutination in cross-over trial might indicate that blood transfusion may not be safe, or at least may not provide any long-term benefits. It might play a significant role in treating dogs with babesiosis. In cases of police or military kennels, it would be valuable to perform cross-match tests for all specimens to pick compatible donors in anticipation of any future requirements.

**Keywords:** blood transfusion, babesiosis, Babesia canis, DEA 1.1 antigen, hematology

**SC7.06 - SEROPREVALENCE AND MOLECULAR EPIZOOTIOLOGY OF FELINE IMMUNODEFICIENCY VIRUS IN CROATIA**

Maliko Perharic, Vesna Mojčec Perko, Zoran Milas, Nenad Turk, Ljubo Barbić, Žrinka Štritof, Suzana Hadina, Josipa Habuš, Vladimir Stevanović, Krešimir Martinško, Marija Cvetnić, Vilim Staršina

Department Of Microbiology And Infectious Diseases With Clinic, Faculty of Veterinary Medicine, University of Zagreb, Zagreb/CROATIA

**Background:** Feline immunodeficiency virus (FIV) is a significant pathogen of domestic and non-domestic felids worldwide. FIV is a member of the Retroviridae family, genus Lentivirus. Like other members of Lentivirus genus, after integration of provirus into host cell genome, FIV causes lethal, incurable and lifelong infection. The aim of this study is to investigate and to determine epizootiological features using two different diagnostic methods, as well as prevalent subtype and phylogenetic characteristic of FIV present in the domestic cat population of Croatia.

**Methods:** A total of 285 different blood samples of domestic cats were tested using commercially available rapid enzyme-linked immunosorbent assay (ELISA) for the detection of FIV antibodies. To establish epizootiological features, the investigated cats were divided according to clinical presentation, gender, neutering status and age. Following DNA extraction from 143 blood samples (86 ELISA positive and 57 ELISA negative), the polymerase chain reaction (PCR) was performed to amplify FIV proviral gag gene. Agarose gel electrophoresis was performed to visualize PCR products. Positive PCR product samples were sequenced in both directions and gag sequence fragments consisting of 558 nucleotides were compared with previously reported gag sequences retrieved from the GenBank database in order to determine the phylogenetic characteristic of FIV isolates present in Croatia.

**Results:** Overall seroprevalence of FIV infection among domestic cats in Croatia was 21.4%. Statistically significant clinical feature in FIV infected cats, determined in this study, were inflammatory lesions of the oral cavity. Confirmed risk factors for FIV infection include male gender, non-castrated cats of both sex and cats over the age of 6. Out of 86 ELISA FIV positive samples, the proviral gag gene was amplified in 53 samples by the PCR method. All ELISA negative samples were confirmed negative using PCR technique. Based on the sequence data from 53 Croatian gag sequences were clustered within FIV B subtype, forming four separate phylogenetic groups.

**Conclusion:** This research shows a high seroprevalence of FIV among domestic cats from urban area in Croatia. Such a high prevalence emphasizes a need for better prophylactic measures. Testing all cats of unknown FIV status, particularly those with known risk factors like outdoor access, sick cats, males and non-castrated ones, and identification of positive ones are the key tools for FIV prevention. All positive cats should be isolated from the uninfected ones, and should not have free outdoor access. To prevent potential infection, all cats with outdoor access should be neutered, unless used for breeding. All FIV isolates identified in this research belong to FIV B subtype. Croatian isolates show close phylogenetic relationship with Austrian and Italian FIV isolates, confirming circulation of genetic related FIV viral strains in this part of Europe. Data from this thesis are necessary prerequisite for developing more reliable molecular diagnostic tools, as well as for development and introduction of effective FIV vaccine against field strains from certain geographic areas. Reliable PCR protocols are extremely important in the areas where FIV vaccine is available for establishment of FIV status in vaccinated cats.

**Keywords:** FIV, prevalence, phylogenetic analysis, subtype B, Croatia

**CLINICAL PRACTICE TRACK | COMPANION ANIMALS 2**

**CT4 Imaging**

**Sunday, May 6, 2018**

**12:00 – 18:30**
CT4.01 - RADIOLOGY AS A DIAGNOSTIC TOOL IN THORACIC EMERGENCIES

Raquel Salgüero
Hospital Veterinario Puchol, Madrid/SPAIN

Abstract: Thoracic radiology is one of the most useful imaging modalities to identify thoracic pathologies in small animal practice including emergency cases. Generally, thoracic emergencies require a quick and correct diagnosis before treatment and therefore radiology is an important tool in these animals. These patients are usually very stressed and not stable. Therefore, it is necessary an adequate handling and sedation or general anaesthesia to avoid possible complications. A basic anatomical knowledge of the thoracic structures is needed when assessing a radiograph. A thorough and complete evaluation, including the extra-thoracic and intra-thoracic components is also needed. To the different causes might be separated by areas of the thorax: Extra-thoracic structures, including the thoracic wall, ribs, spine, sternum, humeri and cranial aspect of the abdomen. Diaphragm, such as diaphragmatic rupture. Mediastinum, masses, haemorrhage. Trachea, rupture or obstruction caused by foreign bodies or masses. Oesophagus, foreign bodies, rupture, megaesophagus. Pleural space: - Pleural effusion. - Pneumothorax, usually a tension pneumothorax. Cardiac silhouette: - Pericardial effusion with cardiac tamponade. - Cardiac failure with venous congestion and pulmonary oedema. Lungs: - Pneumonia. - Haemorrhage. - Feline asthma. - Lobar torsion. - Oedema, cardiogenic and non-cardiogenic. - Neoplasia. Most of the thoracic emergencies can be diagnosed by radiology but sometimes advanced imaging techniques such as computed tomography are needed.

CT4.02 - RADIOLOGICAL DIAGNOSIS OF ACUTE ABDOMEN

Raquel Salgüero
Hospital Veterinario Puchol, Madrid/SPAIN

Abstract: Abdominal radiology, in conjunction with abdominal ultrasound, are the most common diagnostic imaging modalities used in general practice in cases presented with an acute abdomen. It is very important that the animals are properly handled and sedated to investigate these cases as sometimes might be life threatening. The main radiographic changes that we should look for in cases of acute abdomen are the presence of GAS, FLUID, MASSES and/or GASTRO-INTESTINAL DILATION. Any abdominal organ might be the origin of the acute abdomen and therefore it is very important a thorough assessment of these radiographs. Gastro-intestinal emergencies are mainly caused by mechanical obstructions, including GDV, foreign bodies, intussusceptions or neoplasia. All of these might cause perforation and secondary septic peritonitis. However, we cannot forget other causes of peritonitis such as acute pancreatitis, bile peritonitis, etc. Main urinary emergencies are caused by urethral or ureteric obstructions, which can develop secondary uroabdomen and acute renal failure. In these cases, sometimes additional imaging techniques such as ultrasound or contrast radiology are needed for the diagnosis. Other origins of an acute abdomen include a ruptured abdominal organ/mass (adrenal, spleen, liver) with secondary haemoblobdren. It is necessary the knowledge of the abdominal anatomy to identify the most likely origin of the lesion. In the majority of these cases, the masses tend to be malignant as haemangiosarcoma, and therefore screening for metastases should be performed before surgical approach. Although radiology can give a diagnosis in some cases, generally additional imaging such as ultrasound or computed tomography are needed to achieve a definitive diagnosis.

CT4.03 - ABDOMINAL ULTRASOUND IN EMERGENCY CASES

Veerle Volckaert
Davies Veterinary Specialists, Herts/UNITED KINGDOM

Abstract: Different imaging modalities are available in most veterinary practices these days and it is therefore important to choose the best modality for each individual patient. Ultrasound is widely used but also suffers from certain limitations that need to be recognized. Although a FAST ultrasound is sometimes being promoted, a good, complete abdominal ultrasound scan is usually required. Some of the most common cases that come in as emergencies and for which ultrasound will or can be used, are patients with acute pancreatitis, mechanical ileus, septic peritonitis or a ureteral obstruction. Knowledge of the normal ultrasonographic appearance of the abdominal organs and of course of the typical features associated with these conditions should be part of the veterinarian’s knowledge performing the ultrasound scans to guarantee the best possible result in these situations.
**CT4.04 - ULTRASOUND OF THE NECK**

**Veerle Volckaert**  
Davies Veterinary Specialists, Herts/UNITED KINGDOM

**Abstract:** Ultrasound is available in most veterinary practices these days and whereas ultrasound of the abdomen is commonly performed, ultrasound of other body parts such as the neck is less routinely done. It is however a relatively fast and feasible technique that can easily be added to the work-up of a patient. Patient selection is important as CT or MRI may be the imaging modality of choice and the limitations of ultrasound as well as the anatomy of this region need to be well understood. In addition to the imaging examination, further procedures such as fine needle aspiration, can be performed ultrasound guided. Structures that can be imaged using ultrasound are the thyroid and parathyroid glands, lymph nodes and the mandibular salivary glands. Although the airways are air filled and reverberation artefact will create difficulties to scan the larynx and trachea, useful information can still be gained sometimes. The large vessels of the neck, the jugular vein and common carotid artery, can be easily recognized and assessed using both B-mode and Doppler. Cervical abscesses due to penetrating or migrating foreign bodies are also not uncommon and mostly when CT is not available, or in addition to, ultrasound can be performed.

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**CT4.05 - CT EMERGENCIES IN SMALL ANIMALS**

**Veerle Volckaert**  
Davies Veterinary Specialists, Herts/UNITED KINGDOM

**Abstract:** More and more veterinary practices are offering CT examinations these days. As a cross sectional imaging modality, CT has a number of important advantages over radiography and ultrasound. Moreover it allows image processing such as multiplanar and volume reconstructions which will aid in the diagnosis making, as well as in possible treatment planning. CT can be used for a large variety of cases in emergency situations, but the main limitation remains the relative lack of soft tissue detail. In trauma cases with suspected spinal cord injury for example, MRI will remain the imaging modality of choice. Depending on the situation, animals may be scanned (awake), sedated or under general anaesthesia. Some of the most common emergency cases for which CT will be indicated are trauma, both to the axial and appendicular skeleton, pneumothorax, hemoabdomen and pleural and/or peritoneal effusion in general. Whereas in many cases, such as trauma cases, the use of contrast media will not always be needed, contrast administration may still be useful when scanning patients with for example a hemoabdomen. Whether or not to use contrast media will therefore depend on patient’s individual situations.

**Fig 1.** 3-D Volume reconstruction of a traumatic mandibular fracture and temporomandibular joint luxation in a cat.  
**Fig 2.** Pneumothorax in a dog with pulmonary bullae. A chest drain is present in the dorsal left hemithorax.
Keywords: Emergency, small animals, CT

CT4 Soft Tissue Surgery
Monday, May 7, 2018
09:00 – 18:00

CT4.06 - BRACHYCEPHALIC OBSTRUCTIVE AIRWAY SYNDROME (BOAS): FACTORS, DIAGNOSIS AND TREATMENTS

Manuel Jimenez - Pelaez
Surgery, AUNA ESPECIALIDADES VETERINARIAS, Valencia/SPAIN

Abstract: Introduction Brachycephalic Obstructive Airway Syndrome (BOAS) is gaining relevance in our centres due to the increased popularity of brachycephalic breeds among our clients. The average age of appearance, most dogs begin to show clinical signs at 2-3 years of age, there being cases of severe laryngeal collapse in puppies less than 6 months of age, especially observed in Pugs. Components of BOAS Nasal component: stenosis of the nostrils and inside the nasal cavity, present approximately in 80% and 50% of cases respectively. Naso-pharyngeal and oro-pharyngeal component: excessive length but also thickness of the soft palate, present in almost 100% of cases. Laryngeal component and tracheo-bronchial: eversion of the laryngeal saccules and also weakness / laryngeal conglomeration / laryngeal flaccidity (laryngomalacia) primary or secondary laryngeal collapse. Clinical Signs The most common clinical signs observed are: snoring (diurnal and nocturnal), inspiratory noises / stridor, respiratory distress and heat, stress, and exercise intolerance, cyanosis, which can lead to syncope and death. Vomiting and regurgitations are the most common digestive signs observed. Medical Treatment The most important consideration is the weight management of the animal. Other key points in the medical management of the BOAS are the environmental management, avoiding hot weather, intense physical exercise, excessively humid or excessively dry environments. The glucocorticoids of fast action are the anti-inflammatory more used. Anti-rhinitis and gastric protectors as well as prokinetics, has also shown improvement in clinical signs by 91%. Surgical Treatments Rhinoplasty: The technique in wedge or alaplasty has been described with different surgical tools such as conventional scalpel, electrocautery or CO2 laser. Soft palate surgery: Palatoplasty: The objective of palatoplasty is to eliminate enough tissue of the soft palate (length and thickness) to reduce the resistance in the passage of air from the airways and the vibration of the soft palate. For this, it have been described numerous techniques being the folded flap palatoplasty or the modified enlarged palatoplasty (using electrocautery or CO2 laser) the most used techniques. Laryngeal saccules eversion: The laryngeal saccules eversion is produced by increased inspiratory pressures. This is frequently seen together with laryngeal collapse but it is not a laryngeal collapse. Laryngeal sacculectomy is performed when they are chronically everted causing obstruction. Laryngeal collapse: The laryngeal collapse is considered in most of the cases a secondary component of the BOAS, existing a classification in three stages. In some pugs, this can be considered a primary laryngeal collapse, due to severe laryngeal congenital flaccidity [laryngomalacia]. The treatment is based on its degree of severity. In general, severe laryngeal collapse is a negative prognostic factor when treating BOAS. Late: laser-assisted turbinectomy. This can be performed with a diode laser and a rigid endoscope to treat intranasal obstruction by resection of stenosing turbinate. Outcome The diagnosis is excellent in young animals and or without important secondary lesions such as laryngeal collapse, with a clear and lasting improvement of respiratory (88%-97.5%) and digestive signs (80%).

Keywords: palatoplasty, laryngeal collapse, soft tissue surgery, dogs, BOAS

CT4.07 - DIAGNOSIS AND SURGICAL TREATMENT OF PLEURAL SPACE DISEASE

Catriona Macphail
Clinical Sciences, Veterinary Teaching Hospital, Colorado State University, Fort Collins/CO/UNITED STATES OF AMERICA

Abstract: Air, fluid, or tissue can compromise the pleural space and cause an acute respiratory crisis in small animals. Animals with pleural disease typically present with rapid, shallow respirations indicative of a restrictive respiratory pattern. Other clinical signs may include pyrexia, lethargy, anorexia, weight loss, and coughing. The duration of clinical signs varies widely as animals may present in acute distress or with more insidious signs of chronicity. Evaluation of pleural disease requires thoracocentesis, which may therapeutic in addition to being diagnostic. Pneumothorax is most commonly due to blunt trauma, however spontaneous pneumothorax can occur due to bullous emphysema, or neoplastic or abscess perforation; surgical intervention is more commonly indicated for the latter. If fluid is retrieved from thoracocentesis, it can be characterized into one of seven general types of pleural and mediastinal effusions based on cytological characteristics: transudate, modified transudate, exudate, septic exudate, haemorrhagic effusion, chylous effusion, and neoplastic effusions. Retrieved fluid is evaluated cytologically and submitted for bacterial culture. Thoracic radiographs should be performed to assess the degree and type of disease, determine unilateral versus bilateral involvement, and evaluate for intrathoracic masses. Thoracic ultrasound and advanced imaging (CT or MR) can be beneficial in determining an underlying aetiology of effusion. Surgical intervention is most commonly indicated for pyothorax and chylothorax, although the specific approach and procedures vary among surgeons. Prognosis for both conditions is fair to good, as recurrence is possible. Diaphragmatic hernias can be congenital or traumatic in origin, and acute or chronic in duration. The degree of respiratory compromise depends on the amount of abdominal viscera displacement, and the presence and severity of other thoracic injuries or conditions. Landmark retrospective studies found mortality associated with diaphragmatic hernia is higher when surgery is performed less than 24 hours or more than 1 year after diagnosis. However, recent studies have not found an effect of the duration of the hernia on overall outcome. Anaesthesia and surgery should ideally be delayed until the animal can be adequately stabilized. However, emergency surgery is indicated if there is gastric herniation or if the animal respiratory status deteriorates. The goals of surgery are to reduce the herniated organs back into the abdominal cavity, examine the organs for any vascular compromise or perforation, and repair the diaphragmatic defect. If the
animal survives for the first 12 to 24 hours after surgery, the prognosis is excellent. Reported survival rates range from 80 to 90% following surgical correction. Deaths are most often due to concurrent injury.

Keywords: pleural space disease, pneumothorax, pycnotherax, chylothorax, diaphragmatic herniation

**CT4.08 - HEPATIC SURGERY. LIVER BIOPSY TECHNIQUES AND LIVER LOBECTOMIES**

Kenji Tani
Yamaguchi University Joint Faculty of Veterinary Medicine, Yamaguchi/JAPAN

**Abstract:** The most common hepatic surgeries performed in small animal practice are liver biopsies and partial or complete liver lobectomies. Proper understanding of surgical anatomy including hepatic lobes and vascular supply as well as appropriate anesthetic protocol and application of appropriate surgical techniques are important for successful and safe surgery. Hemorrhage is a common complication during hepatic surgery. Although only 2 mL of hemorrhage from liver biopsy of clinically healthy dogs is reported, underlying hepatic disease increase the risk of hemorrhage during liver biopsies and surgeries. Prior to performing hepatic surgery, it is strongly recommended that thrombin time (PT), activated partial thromboplastin time (APTT) and platelet count be evaluated. In this lecture, the speaker will describe basic techniques of major procedures of hepatic surgery. Liver biopsy Liver biopsies are performed to obtain a definitive diagnosis of liver disease. Percutaneous liver biopsies include palpation/percussion-guided, ultrasound-guided and real-time ultrasound-guided biopsies. Laparoscopic and open surgical biopsies are also commonly performed. Transjugular liver biopsy is seldom in veterinary field although the procedure has been developed experimentally by use of canine model. Open surgical biopsies including punch biopsy, overlying mattress sutures and guillotine method, are performed when the abdomen has been already approached for another surgery. Liver lobectomy Liver lobectomy is performed in dogs and cats for many reasons ranging from removing traumatized or abscessed lobes, to biopsy and removal of solitary tumor, and the location of the lesion will determine if partial or complete liver lobectomy. Many techniques for partial and complete liver lobectomy have been described, including ligation with various circumferential ligatures, parenchymal dissection and individual ligation of vessels, harmonic scalpel dissection, surgical stapler application, surgical vessel sealer and so on. Adequate exposure of propose ligation site with adequate size of sealing devices is essential to avoid iatrogenic injury to vasculature during dissection and to ensure secure hemostasis of vessels and minimize surgical time.

Keywords: dogs, Hepatic surgery, Liver lobectomy, Liver biopsy, Complications

**CT4.09 - CONTROVERSIES IN GASTRIC DILATATION-VOLVULUS SYNDROME**

Catriona Macphail
Clinical Sciences, Veterinary Teaching Hospital, Colorado State University, Fort Collins/CO/UNITED STATES OF AMERICA

**Abstract:** Dogs with gastric dilatation-volvulus syndrome (GDV) require immediate medical and surgical care to improve the odds of survival. Numerous controversies exist regarding risk factors, initial management, diagnostics, surgical procedures, and prognosis. The etiology of GDV is still generally unknown, although numerous confoundational, dietary, and environmental risk factors have been investigated. There is a wide spectrum of presentation of dogs with GDV. Astute and educated owners may pick up on subtle clinical signs, such as mild abdominal distension and increased salivation. However, often the dog is not brought in until more overt signs are present. Diagnosis and emergency treatment of GDV are often performed based off of a high index of suspicion from signalment, presentation, and physical examination findings (i.e. a large or giant deep-chested dog with high anxiety and restlessness, non-productive retching and hypersalivation, signs of cardiovascular compromise, and abdominal distension or tympany). Diagnostics that should be considered include minimum database, coagulation profile, serum lactate measurement, preoperative abdominal radiograph, and thoracic radiographs. Serum lactate levels > 6.0 mmo/L have been historically associated with gastric necrosis and an increased mortality rate. The most recent study supports this original finding, but uses an initial plasma lactate concentration cutoff of > 7.4 mmo/L for predicting gastric necrosis and outcome. Ventricular arrhythmias most commonly occur in dogs with GDV 24 to 48 hours postoperatively. However, the presence of preoperative arrhythmias has been shown to be associated with an increased mortality rate across multiple retrospective studies. Dogs with GDV are surgical emergencies. A guideline for a general surgical plan for dogs with GDV is as follows: dearterate the stomach, explore the abdomen, assess splenic viability and perform splenectomy if indicated, assess gastric viability and perform a partial gastrectomy if indicated, and perform a gastropexy, incisional, belt-loop, or circumcostal gastropexy from the pyloric antrum to the right side of the abdominal wall should be performed based on surgeon preference. Overall mortality for dogs with GDV is approximately 10 to 18%.

Keywords: gastric dilatation-volvulus, gastropexy, splenectomy, partial gastrectomy, controversy

**CT4.10 - INTESTINAL SURGERY: HOW TO OPEN AND CLOSE SAFELY THE SMALL INTESTINE**

Manuel Jimenez - Pelaez
Surgery, AUNA ESPECIALIDADES VETERINARIAS, Valencia/SPAIN

**Abstract:** Small intestine is composed for the duodenum, jejunum and ileum, with origin at the pylorus and ending at the ileo-colic union. Duodenum has a descending and an ascending portion. The most important difference between dogs and cats is that dog’s common bile duct enters the duodenum across the major duodenal papilla separately from the pancreatic duct. In cats, the common bile duct and the pancreatic duct join together before its entrance across the major duodenal papilla. Jejunum is the longest portion of the small intestine, starting in the duodenojejunal flexure and being composed for multiple intestinal loops. Ileum is the shortest part and has an artery in its antimesenteric border. Vascularisation comes from the cranial mesenteric, celiac and caudal mesenteric arteries. Venous drainage goes through the cranial mesenteric
and gastroduodenal veins until the portal vein. Antibiotic use in intestinal surgery is a controversial, but it is recommended to use first generation cefalosporines in the perioperative period. Intestinal viability is determined by subjective methods (peristalsism, vascular pulse and color) but frequently do not necessarily correlate to the histologic severity of ischemic damage. Resection and anastomosis is used in severe intestinal damage, usually because of foreing bodies (FB), masses, infususions or incarcerations. Blood vessels irrigating the region are ligated, mesentery is incised and crushing forceps and doyen clamps (or the assistant fingers) are placed to the intestinal borders before transecting the damaged loop. End-to-end anastomosis could be done in two half circle single-layer, simple continuous intestinal sutures starting and finishing each one in the mesenteric and antimesenteric borders (3-5mm from the border of the incision and 3-5mm between knots), simple interuptes sutures or with GIA and TA staples. There are some techniques to correct substantial diameter difference between both intestinal extremeties. Enterotomy is used for FB removals or biopsies. A longitudinal incision (or some elliptical in biopsy samples harvesting) is made in the antimesenteric border, aborally to the FB and a single continuous (or simple interuptes pattern suture), one-layer, perforating and appositional pattern is used to close the enterotomy. Monofilament synthetic absorbable material 3/0-5/0 USP on tapering needles is the recommended. Avoid traumatic needles. Submucosa is the strongest layer of the intestinal wall for its vascularization and collagen concentration and has to be included. It is recommended to perforate the mucosa to ensure submucosa inclusion in the suture. Om entum has angiogenic, immunogenic and adhesive properties that assist in restoring blood supply, controlling infection, and establishing lymphatic drainage, so omentalization is recommended. Enteral nutrition has to be started during the first 24 hours because it stimulates mucosal growth, maintains mucosal integrity and reduces bacterial translocation risk. Oral glucose can be given at 12h. The more frecuent complications are septis, perforation (associated to intestinal suture dehiscence between 5-7 days); Abscesses (rare and secondary to excessive and no-gentle organ manipulation); Short-bowel syndrome (malabsoption and malnutrition due to reduced absorptive intestinal surface after extensive resection. Amount and location resected, ilieocecal valve and owner patience contribute to the prognoses); and Paralytic ileus (common complication specially after unkind gastrointestinal manipulation). Keywords: dogs, small intestine surgery, enterectomy, enterotomy, soft tissue surgery

There are significant anesthetic concerns when performing C-sections, and these issues are addressed elsewhere. A large support staff is necessary for this procedure and two teams are usually identified: one to take care of the dam (anesthesia and surgery) and one to take care of the puppies (neonatal resucitation). If possible, it is ideal to have one person for each puppy in the litter. A large caudal midline abdominal approach is made following induction of general anesthesia. Care must be taken to avoid lacerating engorged caudal epigastric vessels or damaging mammary tissue. Good depth control must also be exercised when approaching the abdominal wall to avoid accidental penetration into the gravid uterus. The linea alba is carefully incised and the uterine horns and uterine body are exteriorized. The rest of the abdominal cavity is packed off to prevent contamination from uterine contents. At this point, there are two methods for performing a C-section. A hysterotomy can be performed if the dam is not going to be spayed, if it is difficult to isolate the ovarian pedicles, or if there is a puppy wedged in the uterine body and cervix. A longitudinal incision is made in the uterine body, large enough to fit a puppy through without tearing the uterine wall. Each puppy is then milked out through the incision and each placenta is gently detached if possible. The amniotic sac is opened and the umbilical vessels are clamped with mosquito forceps then transected from the placenta. The puppy is then handed off in a sterile towel to an individual on the puppy team for resuscitation. Once all the puppies are removed, a routine ovariohysterectomy can be performed. Otherwise, the hysterotomy incision is closed with absorbable monofilament suture in a single or double-layer continuous pattern. If there has been contamination of the abdominal cavity, it is extensively lavaged and then closed routinely. An alternative technique is to perform an en bloc ovariohysterectomy. Large clamps are placed across each ovarian pedicle and then the uterine body. The entire tract is removed and handed off to the puppy team where the uterus incised and puppies recovered. As oxygen and blood supply have been cut off, the team must work very quickly to remove the puppies. The pedicles and uterine body are ligated routinely. Abdominal closure is also routine, except that the skin is typically closed with an intradermal pattern, so that the puppies can nurse without disrupting the incision.

Keywords: dystocia, neonatal resucitation, canine Cesarean section, hysterotomy, hysterecomy

CT4.12 - URINARY BLADDER AND URETHRA SURGERY. MAKE IT EASY AND SAFE

Kenji Tani
Yamaguchi University Joint Faculty of Veterinary Medicine, Yamaguchi/JAPAN

Abstract: Surgical procedures of lower urinary tract (bladder and urethra) in dogs and cats are indicated for a variety of diagnostic and therapeutic reasons. Successful surgery relies on appropriate evaluation, diagnostic and medical stabilization especially in patients presented with renal failure. Proper understanding of surgical anatomy including vascular supply and nervous innervation as well as appropriate anesthetic protocol and application of appropriate surgical techniques are important for successful and safe surgery. In this lecture, the speaker will describe basic techniques of major procedures of lower urinary tract surgery.
Cystotomy/Cystectomy A cystotomy is a surgical opening created in the wall of the urinary bladder. A cystectomy is a removal of a portion or whole of the urinary bladder. Cystotomy/Cystectomy is indicated for treatment of bladder problems including removal of bladder stones, bladder tumors, blood clots, and repair of ectopic ureters. These procedures also can be done to obtain a biopsy sample of the urinary bladder and to evaluate urinary tract infection resistant to treatment. Removal of a portion of the bladder wall for cystectomy is usually not significantly complicated. Up to 60-70% of the urinary bladder can be resected with minimal clinical signs. If the whole bladder is removed, ureters should be anastomosed to vagina (female) or prepuce (male). Complications following a cystotomy are uncommon, but urine leakage, infection, persistent hematuria, obstructions and impaired urinary output should be monitored as post-operative problems.

Urethrotomy/Urethrostomy An urethrotomy is a surgical opening created into the urethral lumen, usually to remove an obstruction temporarily. When permanent diversion of urinary flow proximal to an obstructed or severely damaged, or neoplastic urethra is required, an urethrostomy which is to the creation of a permanent stoma into the urethra for urinary diversion, is performed. Although it is possible to create stoma in the urethra in several sites (ex: base of penis, scrotal, perineal or prepubic), scrotal urethra is the optimal site in dogs. This site is superficial, risk of stenosis is less and the urethra is a reasonable diameter. In cats, perineal urethra is the major site for urethrostomy, as it curves over the ischial brim.

Keywords: cats, dogs, lower urinary tract, Cystotomy/Cystectomy, Urethrotomy/Urethrostomy

CT4 Orthopedic Surgery
Tuesday, May 8, 2018
09:00 – 18:00

CT4.13 - CANINE ELBOW DYSPLASIA: TIPS FOR MAKING THE DIAGNOSIS IN GENERAL PRACTICE
Ross Palmer
Department Of Clinical Sciences, Veterinary Teaching Hospital, Colorado State University, Fort Collins/UNITED STATES OF AMERICA

Abstract: The most commonly diagnosed manifestations of canine elbow dysplasia (CED) include medial coronoid process disease (MCPD), osteochondritis dissecans (OCD) and un-united anconeal process (UAP). As with any orthopedic disease, diagnosis of CED begins with an ‘index of suspicion’ based upon patient signalment, history and physical examination.

Signalement & History. While CED can affect most any breed of dog, certain large breeds such as Golden Retrievers, Labrador Retrievers, Rotweilers, Bernese Mountain Dogs and German Shepherd (UAP) dogs are over-represented. The classic patient history is one of thoracic limb lameness, stiffness, exercise intolerance or non-specific mobility issues in 4-8 month old puppies, but dogs of most any age can be affected.

Gait. Many puppies with CED, especially MCPD, stand with their paws externally rotated (supination). The stance posture has been shown to shift the line of load bearing toward the lateral side of the elbow joint. Lameness severity can vary from very mild to very obvious head lifting on the side of greatest discomfort. Subtle lameness can be detected by having the patient descend stairs and/or using slow-motion video recorded from a smart-phone.

Orthopedic Examination. Joint effusion is most easily detected in the standing patient as a puffy, fluid pouch between the lateral epicondyle and the olecranon process. Normally, during passive elbow flexion, puppies can place their distal antebrachium against the point of their shoulder with no discomfort. When elbow flexion is painful, dogs resist flexion or pull their scapula dorsally to relieve the elbow flexion. As OA progresses, elbow flexion is physically restricted by osteophytosis and/or periartricular fibrosis. Normal puppies can extend their elbow with no discomfort and display only mild discomfort upon forced, full elbow extension. The elbows should specifically be tested in gentle pronation and in supination as this is not painful in most normal puppies, but puppies with MCP disease will usually display some discomfort. Likewise, many puppies with MCP disease are uncomfortable when digital pressure is applied directly over the MCP; though caution should be employed when interpreting this pain because the median nerve passes just distal to the MCP and even normal dogs may be painful with excessive digital pressure.

Diagnostic Imaging. I recommend standard mediolateral, flexed mediolateral, and crano-caudal radiographic views. Accurate radiographic positioning and proper exposure are required for diagnosis of early stages of CED. While diagnosis of UAP is usually relatively easy, intentional scrutiny of specific areas maximizes the diagnostic value of radiography for MCPD and OCD. I recommend specifically looking for the following lesions: Abnormal contour or loss of the normal “beak-shaped” contour of the MCP (M-L view) Mild sclerosis below the trochlear notch of the ulna (M-L view) Osteophytosis of the cranial margin of the radial head (M-L view) Periarticular osteophytes along the dorsal margin of anconeal process (flexed M-L view) Osteophytosis along the lateral epicondylar ridge (flexed M-L view) Radiolucent OCD lesion on the medial aspect of the humeral condyle (Cr-Cd view) Periarticular osteophytes (“lipping”, “spurring”) associated with the MCP (Cr-Cd view)

CT4.14 - MEDIAL CORONOID PROCESS DISEASE: PERSPECTIVES ON TREATMENT
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Abstract: Medial coronoid process disease (MCPD) is a complex disease process with a wide array of presentations and responses to various therapies. Some inherent disease variation is expected based upon different severities and stages and patient ages at the time of presentation. Further, MCPD may not even be a single disease; rather it may merely be an anatomic localization of a various diseases each with a different underlying etiopathogenesis. There is evidence that MCPD involves complex interactions of genetic predispositions, osteochondrosis (at least in some breeds), various mechanical overloads (muscle-tendon imbalance vs. joint incongruity), joint instability, and/or MCP osseous weakness/osteoecrosis/
vascular compromise. The relative contributions of each of the above likely varies between dog breeds and amongst different manifestations of MCPD and other forms of elbow dysplasia. While the disease remains poorly understood, it is clear that the simple model of radio-ulnar “step incongruity” is not consistently present (even temporally) during the skeletal development of all dogs who develop MCPD. Further, it is now clear that proximal ulnar ostectomy (PUOstectomy) results in a complex 3-dimensional re-orientation of the proximal ulnar segment that may or may not decrease MCP overloading (depending upon ostectomy configuration and other factors), but it does NOT result in simple axial shortening of the proximal ulnar segment. Release of the ulnar insertion of the tendon of the biceps/trachealis complex (BBC) has been advocated when transverse plane radiolucent incongruence is present, but when combined with PUOstectomy the effect of this procedure upon the complex 3-D re-orientation of the proximal ulnar segment is especially unclear.

An algorithmic approach to MCPD therapy has been proposed based upon its varied manifestations. Results of such an algorithmic arthroscopic treatment approach to 23 elbows [fragment excision, + subtotal coronoid ostectomy [SCO] for cartilage erosion score > 3, MCP apex incongruity and/or large apical fragment, + DPUS with RUL ≥ 2mm at MCP base] were reported. They found presenting lameness was more severe and initial gait analysis/improvement greater with incongruent elbows and/or severe cartilage disease, but these factors did not affect long-term outcome. There was some evidence for improvement in long-term outcome with this algorithmic treatment approach. Clearly, no single treatment is indicated for all the recognized manifestations of MCPD. With a variable and unclear understanding of the pathogenesis of the disease and unclear understanding of the mode of action of many surgical treatments, one must question how aggressive our surgical management should be and if a ‘one size fits all’ approach or even an algorithmic approach to surgical treatment can be justified, especially in the skeletally immature patient. Perhaps surgical treatment in the skeletally immature patient should be limited to simple MCP fragment removal or conservative SCO followed by close disease-surveillance follow-up and lifelong nutritional and rehabilitative support of joint health.

CT4.15 - HOW TO SURGICALLY MANAGE PELVIC FRACTURES
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Abstract: Pelvic fractures are amongst the most common of fractures in dogs & cats. This is the result of the “wooden box” shape of the pelvis. Because of this shape, fractures usually occur in 3 or more separate locations in the pelvis. However, not all of pelvic fractures require surgical stabilization. Surgical fixation is primarily indicated for those fractures that are present along the lines of load transmission from the pelvic limb to the spine (ie acetabulum, ilium, sacroiliac joint). Fractures of the pubis and ischium, which frequently occur along with these “load transmission line” fractures, do not typically require any fixation. Since the pelvis is surrounded by a large muscle mass, it often requires severe vehicular trauma to create pelvic fractures. Not surprisingly, concurrent traumatic injury to the thorax (rib fractures, pneumothorax, pulmonary contusions, traumatic myocarditis), abdomen (hemoabdomen, herniation, urinary tract trauma) and spine (vertebral fracture, sacro-iliac luxation, sacral fracture, etc) is common. Serial general physical, orthopedic and neurological evaluations are warranted before surgical treatment. Complete blood count (CBC), serum biochemistry and urinalysis should be performed. Thoracic radiographs and abdominal imaging is warranted in most cases. Pelvic radiographs typically include standard ventro-dorsal, lateral and oblique views; the latter is to offset the hemipelvies from one another to allow for improved detection of fractures. Increasingly, computed tomography (CT) is used; combined volumetric (3-D) and standard 2-dimensional ‘slice’ analysis most accurately characterizes pelvic injuries. Pelvic fracture repair is delayed until the patient’s cardiovascular status permits safe administration of general anesthesia and significant soft tissue injuries (urinary trauma, diaphragmatic hernia, etc) have been managed.

Fixation of pelvic fractures is most frequently accomplished with internal fixation using bone plates and screws. Sacroiliac (SI) luxations are frequently treated with screws inserted in lag fashion. The advent of minimally invasive osteosynthesis (MIO) using intraoperative imaging has greatly simplified and improved the treatment of such fractures. SI fractures are commonly either long, oblique or transverse configurations. Reduction of ilial fractures is usually obtained using some combination of direct fragment manipulation, plate-assisted reduction (nice for transverse fracture configurations; does not work with most locking plate systems) or forceps “walking/sliding” maneuver (nice for long, oblique fracture configurations). Acetabular fractures require perfect anatomic reconstruction and rigid fixation if long-term restoration of function and comfort are to be expected. Some acetabular fractures are treated with pins, wires, screws and polymethylmethacrylate (PMMA) bone cement, while others are treated with either conventional or locking plates. One advantage of locking systems is that perfect anatomic plate contouring is not needed. One disadvantage of locking plates, is that most systems require “fixed-angle” screw insertion such that angling of screws away from joints and toward maximal cross-sectional bone purchase is not feasible. There are rare instances of inherently stable, minimally displaced “load transmission line” pelvic fractures that do not require surgical stabilization, but they should be closely monitored via radiography and rectal exam in the first few weeks to confirm that displacement and pelvic canal collapse are not occurring.

CT4.16 - OPTIONS FOR SURGICAL MANAGEMENT OF CRANIAL CRUCIATE LIGAMENT RUPTURES
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Abstract: Cranial cruciate ligament (CCL) deficiency is the leading cause of degenerative joint disease (DJD) in the canine stifle. The anatomy of the canine stifle is complex and the pathogenesis of CCL rupture is not fully understood. Several competing theories on the pathogenesis and several techniques based on these theories have been presented mostly during the last 40 years. The main categories of techniques are...
intraarticular, extracapsular and osteotomy, of which techniques of the two latter categories are still widely in use. The uncertainty about the pathogenesis and thus the correct technique of repair may be a reason for the multitude of proposed surgical techniques and the lack of preventive measures. The main categories of techniques are intraarticular, extracapsular and modifying osteotomies, of which techniques of the two latter categories are still widely in use. Due to the non-uniform reporting, comparisons between techniques are more difficult. In the extracapsular techniques group, the author has performed more lateral fabellar suture (LFS), however other techniques less used are fibrular head transposition and Tightrope which differs from LFS by utilizing bone anchors rather than bone tunnels and fabella as attachment points. In regard to osteotomies, the literature and the author favor TPLO, one of the oldest and the most researched technique, if the surgeon is able to invest the time and resources to acquiring the equipment and mastering the technique. Another osteotomy that may result in overall good and predictable outcome is the cranial tibial wedge osteotomy (CTWO), which the author uses it when TPLO cannot be performed safely and biomechanically due to a very inclined tibial plateau angle. The author prefers other modifying osteotomies than the TTA, due to lack of evidence of mechanical stabilization and severe complications seen during the clinical experience. Other techniques that have been less used in the tibial plateau angle are the proximal tibial osteotomy (PTIO), triple tibial osteotomy (TTO), circular tibial osteotomy (cTTA) and modified Maquet technique (MMT) technique. The fact that there are many techniques for the treatment of CrCL rupture ensures that no technique is deemed superior and achieves perfection in terms of restoring the biomechanics of the canine stifle, and in addition, none will prevent the progression of secondary diseases, such as osteoarthritis and delayed meniscal injuries. Meniscal injury that is not identified at the initial surgery or that occurs after stifle stabilization can cause persistent lameness. In this session we will review the treatment options, outcome and complications associated to the surgical management of CrCL rupture. Non-surgical management has been considered a reasonable alternative for small dogs (less than 15 kg in weight). A study on non-operative management of CrCL rupture found that 85.7 % of the small patients were either normal or improved after 6 months. This has also been the author’s experience, which with the appropriate medications, weight loss regimen and exercise modification with physical therapy, a successful outcome can be achieved in dogs that are not great candidates for surgical stabilization.

Keywords: cranial cruciate ligament, TPLO, Lateral fabellar suture, meniscus, tibial osteotomy

CT4.17 - NON-SURGICAL STRATEGIES TO PRESERVE JOINT HEALTH

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Abstract: For life long promotion of joint health we will consider the importance of attaining a lean body conformation through nutritional management, dietary supplementation with nutraceuticals including glucosamine, chondroitin sulfate, and avocado-soybean unsaponifiables and use of an evidence-based omega-3 fatty acid enriched diet.

The Importance of Lean Body Conformation. In the Labrador Retriever Lifespan Study, a group of dogs (n = 48) from 7 litters were enrolled in paired feeding study design.Dogs in each litter were randomised into groups of 6 based upon body weight and gender and randomly assigned to 1 of 2 feeding groups. Housed identically, one dog in each pair was fed ad libitum and its paired litter mate was fed the same diet but limited to 75% of the amount of consumed by its pair-mate. Not surprisingly, dogs with restricted caloric intake weighed 26% less on average and had lower body condition scores through life. These same dogs had decreased incidence of osteoarthritis. Radiographic evidence of osteoarthritis in multiple joints was present in only 10% of calorie-restricted dogs at 8 years of age, but in 77% of free-fed dogs. Additionally, median lifespan of calorie-restricted Labrador Retrievers was 1.8 years longer! The authors of the lifespan study recommended that dogs be fed at maintain a body condition score < 5 [9-point scale] for the purposes of pet health, well-being and longevity.

If the pet is overweight at the time of joint disease/injury diagnosis, healthy weight loss is promoted by a specifically formulated weight loss diet that ensures the necessary macro and micronutrients and the energy requirements to support steady weight loss (~1-2% of body weight/week) toward the targeted weight and body conformation. While the patient’s estimated daily Resting Energy Requirement (RER) can be calculated and the dietary energy intake adjusted accordingly, variations in individual metabolic rates make it essential to regularly (every 2 weeks) monitor and record the patient’s progress toward their weight loss goals.

Evidence-Based, Omega-3 Fatty Acid-Enriched Diets decrease joint inflammation, improve lameness and patient activity and reduce patient reliance upon NSAIDs. Omega-3 fatty acids, eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), are most easily and safely administered within a specific therapeutic diet. Interestingly, not all “joint support diets” have controlled studies to support their use. When treating overweight patients, I first focus upon weight loss with a therapeutic weight loss diet until the target weight is achieved. Then, I slowly transition the pet to a clinically tested, omega-3 fatty acid enriched therapeutic diet. It is important to closely monitor the patient’s weight during and after this transition as the omega-3 enriched OA diets are more calorically dense.

Chondroitin Sulfate (CS), Glucosamine (GLU), Avocado Soybean Unsaponifiables (ASU) Supplementation. There is compelling in vitro and in vivo evidence to support the use of high quality CS/GLU/AS supplementation in dogs as a strategy to preserve joint health.

Other multi-modal strategies for support of joint health are considered and applied on a custom, patient-centered basis assuming that the above strategies have been employed.
Abstract: Since the turn of the 21st century, nutraceutical use in humans and animals has grown tremendously. Currently, the nutraceutical industry is worth more than $200 billion annually. Nutraceuticals, commonly referred to as dietary supplements/herbal medicines/complementary and alternative medicines, are given to humans and animals with the intent of improvement of health, and prevention/treatment of diseases. In a number of animal diseases (such as arthritis, dermatitis, diabetes, depression, allergies, obesity, cognition decline, periodontal disease; and gastrointestinal, hepatic, renal, and cardiovascular dysfunction), nutraceuticals have been found very effective. Among all chronic diseases, osteoarthritis (OA) accumulation between the articular carilage and subchondral bone induces cartilage breakdown and bone loss. OA in companion animals, especially the dog. Efficacy of nutraceuticals has been found very effective. Among all chronic diseases, osteoarthritis (OA) has been evaluated for their therapeutic and where conventional circular frames cannot be applied. Complex transcondylar screw to be placed as a lag screw. Attention must be applied to ensure that the epicondylar region is accurately reconstructed, otherwise malalignment at the intercondylar area is inevitable. Augmentation of the medial epicondylar ridge using locking plates such as the 2.0 or 2.4 mm Synthes LCP™ or the 2.0 mm or 2.7 mm string pearls (SOP™) plate may be beneficial and as a general guideline, if the author feels that there is any possibility of aberrant healing or tenuous implant purchase, an epicondylar plate is applied. Complex T- and Y-fractures of the humerus can readily be repaired without olecranon osteotomy and the author’s preference is to not use ulnar osteotomy because of difficulties with healing at this tension site. Two approaches are valid – either reconstruction of the medial condylar fracture first, with subsequent repair of the lateral condylar fracture; or repair of the humeral condylar first and then reconstruction of the humerus, which is the author’s preference. Fixation can be applied using standard or locking plates or plate-rod techniques. The author favours 2.7mm and 3.5mm locking plates which can be contoured in multiple directions. An intramedullary pin placed in the medial epicondyle and exiting the proximal humerus via the subtubercular region can facilitate realignment and may obviate requirement for two plates, constituting a plate-rod technique. Cervical wire can be important for re-apposition and stabilisation of spiral fragments. Local fragment recruitment using a lasso of polydioxanone may also be helpful. In small fragments or comminuted juxta-articular fractures of cats or dogs, external skeletal fixation may be beneficial and as a general guideline, if the author feels that there is any possibility of aberrant healing or tenuous implant purchase, an epicondylar plate is applied. Complex T- and Y-fractures of the humerus can readily be repaired without olecranon osteotomy and the author’s preference is to not use ulnar osteotomy because of difficulties with healing at this tension site. Two approaches are valid – either reconstruction of the medial condylar fracture first, with subsequent repair of the lateral condylar fracture; or repair of the humeral condylar first and then reconstruction of the humerus, which is the author’s preference. Fixation can be applied using standard or locking plates or plate-rod techniques. The author favours 2.7mm and 3.5mm locking plates which can be contoured in multiple directions. An intramedullary pin placed in the medial epicondyle and exiting the proximal humerus via the subtubercular region can facilitate realignment and may obviate requirement for two plates, constituting a plate-rod technique. Cervical wire can be important for re-apposition and stabilisation of spiral fragments. Local fragment recruitment using a lasso of polydioxanone may also be helpful. In small fragments or comminuted juxta-articular fractures of cats or dogs, external skeletal fixation may be very useful including application of small half-pins, self-compressing threaded pins or olive wires on arches distally to facilitate condylar reconstruction. Such arches and stretch-rings mounted with linear components further proximally and constituting hybrid fixation systems offer tangible advantages over conventional linear frames and where conventional circular frames cannot be mounted on the proximal thoracic limb. However, external skeletal fixation of the humerus in dogs is a high-maintenance technique in that pin tract discharge and prolonged healing times may be issues. Therefore, the
Author prefers internal fixation unless there is very valid rationale to choose fixator constructs. Incomplete ossification of the humeral condyle (IOHC) may progress to humeral condylar fracture. Therefore, this pathology requires prompt diagnosis and surgical management. Despite, management of IOHC remains controversial. Transcondylar lag screw (large diameter screws) is the most used surgical repair, however, complications like failure to achieve bone union, recurrence of lameness, fissure widening, loss of transcondylar compression, implant failure, and fracture occur.

**Keywords:** condylar fracture, incomplete ossification humeral condyle, elbow fracture

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**CT5.01 - BIOSECURITY AND RE-EMERGING DISEASES IN SUCKLER COWS**

**Luis M. Ortega-Mora, Esther Collantes-Fernandez, Ignacio Ferre, Gema Alvarez-Garcia**

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**Abstract:** In the last 25 years, veterinary medicine has undergone a significant change; where the prevention of herd diseases has outweighed individual medicine. In this context, biosecurity has been gaining importance as a key instrument for the control of transmissible diseases. Biosecurity is defined as the set of strategies and management measures to prevent the entry of diseases and pathogens in the farms, as well as to prevent the transmission of diseases among animals of the same farm. Biosecurity includes two components: biocontainment and bioexclusion. Biocontainment or internal biosecurity is related to measures that limit the spread of pathogens within the farm itself. Bioexclusion or external biosecurity refers to prevention measures that avoid the introduction of external pathogens on the farm. The benefits of applying biosecurity measures include: i) improvement of productive and reproductive parameters, animal welfare and immune response after vaccination; ii) control of zoonoses; and iii) greater personal satisfaction of the farmer. In addition, any biosecurity program must be in accordance with the economic possibilities of the farm and be easily adaptable to its specific situations. There are no many available studies in the EU on the use of biosecurity programs in suckler cow farms. A recent survey carried out in Spanish farms from the Asturiana de la Montaña breed evidenced a poor implementation of both external and internal biosecurity measures. As an example, only 16.5% of the breeders carried out a quarantine to the new incorporations, only 16.7% acquired the stallions with sanitary guarantee and only 7.8% made diagnostic tests to bulls prior to their entry in the herds. The following key points of biosecurity programs in the suckler cow should be considered: i) the use of grazing; ii) natural mating; iii) the use of communal pastures; and iv) the contact with wildlife. Given the wide diffusion of the natural mating in suckler cow systems, the knowledge of the health status of the bulls is crucial in its selection and management. There are numerous diseases that can cause subfertility or sterility in the male. On the other hand, some pathogens can be sexually transmitted or eliminated in semen. Moreover, as grazing constitutes one of the bases of suckler cow systems, digestive helminthoses are one of the main causes of losses. The control programs against these parasites must be designed individually for each farm, depending on the type of management and the climatology of the area. Finally, special attention should be given to re-emerging diseases associated with extensive cattle production. Apart from the zoonotic diseases subject to compulsory control and eradication programs (tuberculosis) and the two classic viral diseases (infectious bovine rhinotracheitis and bovine viral diarrhea), there are two additional groups of diseases that have raised the attention of the sector due to its recent re-emergence: venereal diseases (trichomonosis and campylobacteriosis) and bovine besnoitiosis. In some of them, diagnostic tools are essential in control programs. However, in some others, diagnostic techniques should be improved and preventive and therapeutic tools should be developed to reduce their economic impact.

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**CT5.02 - CRITICALLY ILL NEONATE: DIAGNOSTIC AND TREATMENT APPROACH**

**Gilles Fecteau**

**Université de Montréal, Saint Hyacinthe/CANADA**

**Abstract:** In the bovine neonates, three problems are frequently observed: respiratory distress and hypoxemia, localised or generalised infections and neonatal maladaptation. In the following manuscript, we will try to summarize a rapid methodical approach to the critical bovine neonates.

1. History: History is definitively important. Of particular interest is the evolution since birth. Was the newborn fine and then deteriorate progressively? Was he ever totally normal? How old was he when the problem was first noticed? How is his appetite?

2. Quick overview of the situation: The following problems should be identified early: severe hypo or hyperthermia, cardiac rhythm anomalies (bradycardia or tachyarrhythmia), hypovolemic shock, respiratory distress and neurological signs. These problems should be treated immediately since they are possibly life threatening. Intranasal oxygen administration could be indicated to gain time. A soft plastic cannula is inserted in a nostril, up to the level of the medial canthus, and fixed on a modified small halter.

3. Complete physical examination: As the animal is considered stable, a more thorough and complete physical examination is needed. A particular attention is directed toward the umbilical structures, the joints and the long bone (fractures). Cranial nerves should be quickly assessed.

4. IV route of administration: Placement of a venous catheter is almost necessary. Extra attention would be given to proper asepsis.

5. Blood work: Multiple anomalies could be found on the serum biochemistry profile. Moreover, a complete blood count is often necessary. The severity of the leukocytes changes would help establish the prognosis, and how aggressive the therapy should be. It will also be valuable to follow the evolution over time. Hypoglycemia, elevated lactate, left shift and toxic changes are

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commonly observed in critical neonates. 
6. Fluids: Most cases will benefit from IV fluids. Blood glucose should be monitored. Ten percent dehydration on the 45 kg neonate is 4 to 5 liter of fluids. Acid-base imbalance should be addressed rapidly. Plasma transfusion is sometimes used but is fairly expensive.
7. Antimicrobials: In many cases, a confirmed or suspected bacterial component will be identified. In the best world, a culture and susceptibility should be performed. In many situations, the treatment will precede this information.
8. NSAIDs: Either to control some degree of inflammation or pain or just to help improving the patient comfort. NSAIDs are commonly used despite the possible side effects (ulcer and reduce kidney function).
9. Ancillary tests: Several ancillary tests are indicated depending on the case. Thoracic radiographs or ultrasound, BVD antigen detection (PCR), CSF analysis or synovial fluid analysis are some examples.
10. Daily monitoring: A very important aspect in the management of critical bovine neonates is the evolution over time. Daily monitoring is crucial. Weight gain and objective measurements that will eventually provide assessment and of the evolution. Nutritional support is essential. To manage a critical bovine neonate, a minimum of expertise and technical assistance is needed. Nevertheless, the newborn calf is capable of spectacular resilience. I found this aspect of farm animal medicine very rewarding.

CT5.03 - ADVANCES IN UNDERSTANDING OF TREMATODE PARASITES IN EUROPEAN LIVESTOCK

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Abstract: Fasciola hepatica, Calicophoron daubneyi, and Dicrocoelium dendriticum commonly infect cattle and small ruminants throughout Europe. Their geographical distribution matches the environmental, climatic and host management conditions that are required by the parasites' free living stages and intermediate hosts. Trematodes have indirect life cycles, involving one or more intermediate hosts, with the first being a mollusc. Some have evolved incredible and fascinating life histories, whereby each stage ensures the survival and reproductive success of the next in unstable or unpredictable environments. This is exemplified in Dicrocoelium dendriticum, where a single parasite sacrifices itself by development to a larval stage in the brain of its second intermediate host, changing the ant's behaviour to ensure that it is eaten by a final host; thereby allowing metacercariae stages in the ant's abdominal cavity to complete their life cycle. The liver fluke, Fasciola hepatica, has always been economically important in grazing livestock in western UK and Ireland, but in recent decades its geographical range has expanded across Europe as a consequence of wetter and milder conditions. The rumen fluke, Calicophoron daubneyi, was traditionally restricted to northern parts of mainland Europe, but over the past decade livestock movements have enabled the expansion of its range to include the UK and Ireland, where it now shares the same Galba truncatula intermediate host and environmental conditions as F. hepatica. The true economic impact of a single disease in co-infected hosts is difficult to determine, but modern epidemiological methods and abattoir surveillance now allow the impact of trematode parasites to be defined more accurately. This is important in communicating to livestock producers the need for development of sustainable control measures based on avoidance of exposure to metacercarial challenge and the use of anthelmintic drugs. While the optimal conditions for miracidial and intermediate host development are known, current research is focused on understanding the survival and seasonal availability of metacercarial challenge to final ruminant hosts, that is required to inform evasive management and timely treatments on individual farms. Not surprisingly, most producers currently use anthelmintic drugs at those times of year when they expect to see the primary impact of disease on their animals. In high-risk areas for F. hepatica, this has led to the repeated use of triclabendazole throughout autumn and winter; and not surprisingly, triclabendazole resistance is now widespread. The development of schemes involving targeted and selective use of anthelmintic drugs is of paramount importance, both in mitigating the impact of resistance, and in slowing its development in those parasites and regions in which the problem is not already critical. Control of trematode parasites depends on the correct use of diagnostic tests, taking into account their sensitivity and specificity to detect different stages of infection at different levels of prevalence. Genomic resources and molecular methods are needed to understand the population genetics of the parasites, and enable development of innovative control strategies. This presentation will expand upon these themes to describe recent advances in our understanding of the biology of trematode parasites in European livestock.

CT5.04 - JOHNE'S DISEASE: AN UPDATE ON DIAGNOSIS AND CONTROL

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Abstract: Johne’s disease or paratuberculosis is a chronic infection of ruminants caused by Mycobacterium avium subspecies paratuberculosis (Map). Affected animals develop a granulomatous enteritis and show progressive loss of weight, diarrhoea, reduced weight gain or milk production. Domestic and wild ruminants are the most common hosts and, traditionally, paratuberculosis has been associated with caprine, ovine or bovine livestock. At present, the disease is worldwide distributed. Transmission takes place mainly by the fecal-oral route by the direct ingestion of faeces bearing Map, or indirectly from milk, water, colostrum or other food contaminated by Map. Diagnosis is a key point since some control procedures are based on the identification of infected animals. While diagnosis in clinical stages is not difficult, identification of subclinically infected animals can be more difficult. Besides the recognition of clinical signs, diagnostic methods are based on: a.- Identification of the causative agent, by bacterial isolation or DNA demonstration in faeces or tissues (culture, PCR), useful in the detection both subclinically and clinically infected animals; b.- Analysis of lesions associated with Map infection including the demonstration of the bacteria the infection (pathology), that in dead animals can detect all the stages of the infection, or c.- Evaluation of the host immune response, either cell-mediated (skin-test, IFN-gamma release assay) or humoral (indirect ELISA). Cell immunity based tests are
more useful in the early or subclinical stages of the disease, whereas humoral methods increase their sensitivity according to the progression of the disease to clinical forms. Bacterial isolation of Map is still considered as the gold-standard method. Efficacy of immunological methods varies according to the stage of the infection; the definitive confirmation is made by post-mortem examination of animals. Due to the complexity of paratuberculosis pathogenesis, the use of a combination of diagnostic tests is necessary to make a correct identification of infected individuals. Control of paratuberculosis can be approached in three ways: a.- Reduction of the possibility of infection of new animals in already infected farms, by an improvement of the hygienic measures, including the early separation of newborn animals from the infected dams, on the grounds that resistance to infection increases with age; b.- Identification and culling of infected animals, mainly faecal shedders of Map. This procedure can be time-consuming and expensive. Faecal culture or PCR are the reference methods, and can be performed in pools of animals. The culling of ELISA-positive animals, theoretically, could permit the elimination of high shedders. c.- Vaccination. Is the most efficient control procedure in terms of economic costs-benefits and the speed in controlling the disease. Animals are vaccinated from 4-5 months onwards with killed vaccines. Although vaccination does not prevent infection, its use substantially reduces the economic losses. The fact that paratuberculosis vaccination interferes with tuberculosis eradication programs, due to cross-reaction to tuberculin test, has led to its use being banned in several countries. The choice of the most convenient control method, as well as the vaccination protocol, has to be made according to the herd characteristics.

Keywords: Mycobacteria, Ruminant, Diagnosis, Control, Paratuberculosis

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**CT5.06 - DOWN COW; DIAGNOSTIC AND TREATMENT**

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**Abstract:**

**INTRODUCTION**

Adult recumbent bovine remains a challenge for veterinary practitioners. To make an accurate diagnosis and establish optimal therapy remains the primary objective. The list of conditions possibly causing an adult cow to become recumbent can be summarised in a few broad categories: electrolyte imbalance (calcium, potassium, magnesium and phosphorus), musculoskeletal injuries (coxaféromal luxation, gastrocnemius rupture), systemic inflammatory illness (acute metritis and mastitis) and nerve paresis (sciatic, obturator or central origin (lymphoma)). THREE NECESSARY STEPS IN THE SYSTEMATIC APPROACH

1) History
The cow’s history is very important in the diagnostic process. In particular, you should collect the following information: age, parturition, possible trauma, response to treatment. 2) Physical examination
A physical examination of a cow that is recumbent requires extra effort. Acute systemic inflammatory conditions: rule out the frequent inflammatory conditions that can occur during the puerperal period. Musculoskeletal problem: examine all 4 limbs, which necessitate turning the cow to see both sides. Look for pain, heat, redness, swelling, angularity, crepitus, fracture, and evident muscle tears. 3) Laboratory analyses
This is a crucial step because electrolyte imbalances

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must be resolved before you should encourage a cow to stand. Serum biochemistry profile. Electrolytes, renal and hepatic function and integrity are important. Also, AST and CK provide insight on the extent of the muscle damage and help determine prognosis. Complete blood count (CBC). The CBC may reveal acute inflammatory response (mastitis and metritis associated with endotoxemia), severe anemia (abomasal ulcer) or persistent lymphocytosis (BLV).

HELPING THE COW TO STAND
Different assistive technologies are available to lift down cows. The flotation tank (aquadift) has the advantage to facilitate standing with little inconvenience. Once the animal is standing, it is easy to examine the pelvis and limb position and to note any swelling, deformities of the proximal limbs, and if the weight is equal on all 4 legs.

USEFUL TREATMENTS FOR RECUMBENT COWS
Fluid replacement therapy
A recumbent animal is often dehydrated and fluid replacement should be considered. Oral or intravenous fluid therapy will help restore basic functions. The fluid should contain calcium and potassium.

Pain control and anti-inflammatory drugs
The administration of analgesic improves the comfort of the animal and helps maintain appetite [clinical signs of abomasal ulcers should be monitored when prolonged use]. Whether it is to reduce inflammation around nerve structures or to decrease the acute inflammatory response associated with endotoxemia, the use of anti-inflammatory drugs in the treatment of recumbent cows is no longer a debate.

Antibiotic therapy
This will be indicated if an infectious process is identified by clinical or laboratory examination. Be aware that many recumbent cows develop clinical signs of pneumonia (fever, tachypnea, increased respiratory sounds, and sometimes a cough).

CONCLUSION
The causes of recumbency are diverse and each situation is unique. A methodical, rigorous, and systematic approach is the only way to increase the chances of success. New ways to assist in lifting the cows could lead to better evaluation, more accurate diagnosis, and ultimately improved accuracy of prognosis.

CT5.07 - PROTOZOAISIS AND ONE-HEALTH: TOXOPLASMOsis AS A RELEVANT EXAMPLE
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Abstract: Toxoplasma gondii is a worldwide distributed zoonotic pathogen capable of infect most of the homoeothermic animals, including birds and mammals. At present, it is estimated that up to one third of the human population is chronically infected by this protozoan parasite. Genus Toxoplasma comprises just one species, that presents an unusual high genetic diversity comprising 231 genotypes (www.toxodb.org) that may differ in virulence degree, habitat, geographical location or host species. Within the complex epidemiology of T. gondii infection, Felidae family serves as key element clustering the definitive hosts for T. gondii. After ingestion of infected meat, millions of oocysts (environmentally resistant form) can be excreted and contaminate environment [including surface waters]; oocysts are the main source of infection for the intermediate hosts (herbivorous and other susceptible mammals and avian species) that will develop tissue cysts. Carnivorism is also an important source of infection for continuation of cycle among intermediate hosts. Currently, the relative contribution of foodborne (meat) sources of infection versus oocysts transmission to human infection is unknown. It is well defined that T. gondii has subpopulations structures in different geographical regions, and human activities highly influence the epidemiology of T. gondii. In the USA, T. gondii is one of the three pathogens (along with Salmonella spp. and Listeria sp.) that account for more than 75% of all deaths due to foodborne disease. In 2016, the European Food Safety Authority reported figures of Toxoplasma infection prevalence in pet and food animals: cat/dog (15.4%), pig (11.8%), cattle (5.5%) and small ruminants (21.1%). Nevertheless, there is no standard pan-European surveillance system on pregnant women nor general population. Prevalence and impact of T. gondii infection in other regions of the planet is less known, although virulent atypical strains seem to predominate in some regions as South America. Toxoplasmosis is generally asymptomatic but can cause important neurological and reproductive disorders. T. gondii has a capability for vertical (congenital) transmission causing abortions, foetal malformations, and ophthalmic sequelae among others when invading foetal tissues. In human population, a major issue is the opportunistic character of the parasite especially in cases of immune-compromised people (transplants, AIDS) in which the disease is more severe. In farm animals, specially sheep and goats, T. gondii is a major cause of economic losses mainly due to reproductive losses and constitutes an important threat for human (health) food safety. In addition, the disease is also relevant in species conservation causing frequent clinical diseases in New World monkeys and Australian marsupials. In summary, T. gondii infection is a joint element among Animal Health, Food Safety and Human Health. Given the fact of the constant evaluation of the epidemiology of this fascinating disease, researchers and clinicians will face new challenges that might require the development of continuous surveillance programs focused on reservoirs, and sources of infection, advanced diagnostic tools and drugs, and safe and efficacious vaccines. Acknowledgements: we gratefully acknowledge the support of MINECO (Spain) [AGL2016-759035], NIH and USDA (2014-67015-22106) and the Community of Madrid, Spain (PLATESA, S2013/ABI2906).

CT5.08 - GLOBAL FOOD SECURITY THROUGH IMPROVED SMALL Ruminant PRODUCTION EFFICIENCY
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Abstract: Different small ruminant breeds and production systems exploit the complementary benefits of co-management with other livestock and agricultural production in seasonally biodiverse environments around the world. Integrated small ruminant farming is adaptable to meet global needs for food security in a range of agricultural systems, and has become the main livestock economic resource in impoverished regions where improved food production efficiency is most
urgentely needed. Humanity faces a fundamental challenge to meet the rapidly increasing food security needs of the world’s growing population. Greatly increased domestic production of food in a manner that is socioeconomically sustainable and carbon efficient is essential in the fight against hunger and unemployment in rural areas. This demands radical improvement in the efficiency of biological production from small ruminant livestock in conjunction with production of other livestock and crops. At the same time, sustainable agriculture is threatened by a rapid global decline in the availability of productive land and severe regional scarcities of replenishable water. These threats are compounded by effects of population growth, resulting in rapid urbanisation and increased demands of affluent consumers for luxury meat. In addition, failures of drugs and chemicals to control crop and livestock disease have become commonplace, highlighting hitherto irresponsible medicines use. Failures to achieve the economic potential of commercial farming in developing agricultural systems and of the role of small ruminants in alleviating poverty in seasonally resource-limited regions, present opportunities for the development of impactful and innovative solutions to allow efficient utilisation of natural resources in target environments. There are many ways in which livestock production efficiency might be improved, and much of what is required can be addressed before the advances in livestock production efficiency can be translated into equitable poverty alleviation. In developing countries, there has been an historic tendency to concentrate on genetic improvement, but this will only redress failures of small ruminant agriculture to meet food security needs if steps are first taken to keep animals alive and productive by sustainable husbandry and development of pragmatic, problem-focused approaches to diagnosis and management of infectious diseases. Better management of known animal husbandry and health problems for which there are acknowledged, albeit potentially imperfect treatments and preventive measures, is a pragmatic and relatively achievable first step. Achievement of sustainable small ruminant production efficiency must first be addressed by the local application of planned animal health by individual producers or keepers. The prevalence of a range of production limiting pathogens is high in small ruminants, hence the development of pragmatic, problem-focused approaches to diagnosis and management of infectious diseases, and control of the production loss that they cause, is important in ensuring good productivity. Solutions such as simple hygiene and colostrum management are already known, but their uptake is poor. Hence there is a requirement for the development of tools and systems aimed at translation of knowledge of good animal husbandry, herd health planning, principles of disease control and mitigation of zoonoses to agribusinesses, farmers, villagers and landless worker small ruminant keepers.

CT5.09 - ABORTIONS AND REPRODUCTIVE FAILURE IN SHEEP AND GOATS

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Abstract: Reproductive failure is one of the main constraints of small ruminant livestock, associated with heavy economic losses. Regarding female infertility, several reasons can be behind. It could be a herd/flock problem (male infertility, nutritional deficiencies, stress…) or an individual doe problem. In the latter, several situations can occur: failure to stand (persistent himen, doe not in season…) or anomalies in the oestral cycle. Anoestrus can be seasonal but also due to malnutrition, post-kidding of related to pathological changes in the reproductive system such as hydrometra, intersex, feralminism, etc. Dams that show regular oestrus but have pregnancy failure, can show metritis or vaginitis. They are caused by bacteria and placental retention is one of the main predisposing factors. In other cases, infertile animals have irregular oestrus, related to embryonic deaths, persistent corpus luteum, presence of mummified foetuses or metritis. Malformations in the reproductive system usually affect fertility. The most commonly diagnosed in small ruminants are ovarian or parovarian cysts and uterine aplasia. Abortions are a serious economic threat in most flocks/herds and a health risk since some of them are zoonosis. The causes of most cases of abortions are never determined but it is estimated that only 50% of them are infective in origin. Abortion outbreaks are usually diagnosed more easily than abortion in an individual animal because diagnostic material is more readily available and individual abortions are more often due to non-infective causes. In case of abortion the dam has to be fully examined for signs of disease, but abortion may occur sometime after infection and aborting does will show few additional clinical signs. The aborted foetuses and placentae should be examined grossly before submitting to the laboratory. Samples from several animals should be submitted because of the possibility of more than one infectious agent being involved. In our experience, the main causes of abortion are Chlamydophila abortus, Toxoplasma gondii, Coxiella burnetti or Border Disease virus. Other etiological agents such as Campylobacter spp, Salmonella spp, fungi or other bacteria, are more rarely identified. Placental examination, both the intercotyledonary areas and cotyledons, is important to identify lesions associated with the different agents. While bacterial abortions usually show a fibrino-purulent placentalitis, in abortions due to Toxoplasma gondii foci of necrosis and calcification appear in the cotyledons. Border disease virus, or other viral agents, usually cause malformations such as cerebellar hypoplasia or arthrogryposis. Submission to the laboratory of a complete clinical history, samples of placenta and foetuses, together with vaginal swabs, pleural fluid of the foetus, sera from the foetus and dams, is advisable in order to get success in the identification of the causative agent of the abortion.

Keywords: Abortion, Sheep, goat, Infertility

CT5.10 - ACUTE ABDOMEN IN THE BOVINE: DIAGNOSTIC APPROACH

Gilles Fecteau¹, André Desrochers², David Francoz², Sylvain Nichols²
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Abstract: INTRODUCTION: The acute abdomen represents both a diagnostic and a therapeutic challenge. A systematic approach based on adequate signalment and history, complete physical...
When to cut or when to wait is not an easy decision procedure in ruminants. CONCLUSION: Exploratory laparotomy is a valuable ancillary diagnostic tool to determine the severity of colic and its response to therapy if attempted quickly. The evolution since the first clinical sign, along with the patient’s immediate requirements, is essential. If surgery is the only possible treatment offering a good survival rate for the animal, there is no reason to delay the intervention. If surgery is not feasible, it is limited to reference centers with specific experience. Abdominocentesis is a simple and practical procedure helpful to manage acute abdomen. However, one should remember some bovine particularities. Abdominocentesis is a simple and practical procedure helpful to manage acute abdomen. However, one should remember some bovine particularities. Abdominocentesis: Abdominocentesis is a simple and practical procedure helpful to manage acute abdomen. However, one should remember some bovine particularities. Abdominocentesis is a simple and practical procedure helpful to manage acute abdomen. However, one should remember some bovine particularities. Abdominocentesis: Abdominocentesis is a simple and practical procedure helpful to manage acute abdomen. However, one should remember some bovine particularities. Abdominocentesis: Abdominocentesis is a simple and practical procedure helpful to manage acute abdomen. However, one should remember some bovine particularities. Abdominocentesis: Abdominocentesis is a simple and practical procedure helpful to manage acute abdomen. However, one should remember some bovine particularities. Abdominocentesis: Abdominocentesis is a simple and practical procedure helpful to manage acute abdomen. However, one should remember some bovine particularities. Abdominocentesis: Abdominocentesis is a simple and practical procedure helpful to manage acute abdomen. However, one should remember some bovine particularities. Abdominocentesis: Abdominocentesis is a simple and practical procedure helpful to manage acute abdomen. However, one should remember some bovine particularities. Abdominocentesis: Abdominocentesis is a simple and practical procedure helpful to manage acute abdomen. However, one should remember some bovine particularities.
and provide better health conditions, as well as increasing efficiency in the animal production. More research is needed to understand the long-term effects on the host.

**CT5 Meeting Growing Animal Protein Demands**

**Tuesday, May 8, 2018**

**09:00 – 17:00**

**CT5.11 – POULTRY, SWINE, AQUATIC ANIMALS**

Daniela Bataglia
Livestock Production Officer, Food and Agriculture Organization of the United Nations, Rome/ITALY

No abstract available.

**CT5.12 – POULTRY, SWINE, AQUATIC ANIMALS**

Lara Iannotti
Public Health, Washington University in St. Louis, Brown School, St. Louis/UNITED STATES OF AMERICA

No abstract available.

**CT5.13 - MEETING THE GROWING DEMAND FOR PROTEINS: CHALLENGES FOR THE VETERINARY PROFESSION**

J Fink-Gremmels
Iras, Faculty of Veterinary Medicine, Utrecht/NETHERLANDS

Abstract: Projections of the increasing world population and the subsequent need for about 70% more food supplies at the global level in 2050, have initiated an intense discussion on what measures need to be taken to close this apparent food gap. In terms of animal proteins, a parallel increase in the global needs is expected, with a rapidly growing demand of poultry meat and increasing demands for dairy milk, while consumption of pork and beef is expected to increase less rapidly. These need for higher production is challenged by the simultaneous decline in available resources for feed materials, implying that a reevaluation of production efficiency is urgently needed. At the same time, the environmental impact of intensive farming is a matter of intensive debate and requires innovative solutions. From the veterinary perspective, this results in the challenge to invent and implement strategies, which increase the efficiency of individual animals by disease avoidance, improved utilization of nutrient supplies, the use of alternative feed materials, precision diets for individual phases of life, and the identification of genetic traits that can be selected to increase efficiency. In turn, a key element in modern farming is optimal health management, as any disease or stress condition is accompanied with production losses and impairment of animal welfare. Reconsidering vaccination programs, was the first solution in disease prevention. However, vaccination cannot be the only solution to be explored as under conditions of an impaired immune competence, due to early life or non-infectious stressors, such as heat stress, which affect large animal populations world-wide, vaccination is less effective or even not indicated. Moreover, emerging public health and societal demand to reduce worldwide the use of antimicrobial agents in veterinary medicine has re-enforced attempts to invent strategies to increase the resilience of animal to infectious diseases and unavoidable stress situations. A key-element in the current investigations is the closer understanding of the animal’s innate immune system and measures to improve it. One of the key elements is the intestinal microbiome that is known to be involved in nutrient utilization, metabolism and growth, and that also has been identified as a major determinant of animal health and resilience to infectious disease and even of animal behavior. In turn, research focuses on compounds and mechanisms, that improve intestinal barrier integrity, intestinal cell functions, and the diversity of the bacterial community in individual parts of the intestinal tract. Major challenges in these investigation are the well-known differences in the structure of the intestinal tract (ruminants versus monogastric species) and the high diversity of the bacterial communities in the gut. The intimate knowledge of veterinary professionals in such physiological differences has contributed significantly to the development of new concept of gut health management. Moreover, veterinary oversight in the development of on-farm concepts and the choice of a combined implementation of hygienic and biosecurity measures, vaccination programs and dietary interventions that stimulate the resilience of animals to infectious and non-infectious diseases becomes a renewed, and major objective in veterinary health care.

Keyword: precision farming, resilience to infections, heat stress, feed additives, animal welfare

**CT5.14 – CHALLENGES FOR THE VETERINARY PROFESSION**

Martin Mitchell
CEVA, Gauteng/SOUTH AFRICA

No abstract available.

**CT5.15 - INVESTING TO ADDRESS THE INCREASING DEMAND FOR LIVESTOCK AND SOCIETAL EXPECTATION IN HEALTHY FOOD SYSTEMS**

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Abstract: Livestock and aquaculture are two of the fastest growing sub-sectors in agriculture. The unprecedented rate of human population increase is generating a growing demand for animal products, particularly in the emerging global middle class and in growing urban communities. Both sectors play a key role in achieving the World Bank’s Twin Goals - ending extreme poverty and boosting shared prosperity-, by the billions of people who depend on livestock and aquaculture for their livelihoods and the high contribution of the sectors to agriculture GDP in non-industrialized countries. The importance of livestock and aquaculture is reflected across a number of the Sustainable Development Goals (SDGs), most of which could not be achieved without adequate and specific attention to animal productions, be on land or under water. This talk will essentially focus on the food security, nutrition and health elements of the SDGs (Goals 2, 3 & 4). Infectious diseases in animals have significant impacts on their health and welfare. They impose direct costs on animal productions, including aquaculture, as a result of reduced productivity, deaths, and cost of disease control. Zoonotic and foodborne diseases affect human
health and wellbeing, translating into illness and associated costs for the public health sector. Emerging diseases and major outbreaks, most of which have also their source in domestic and wild animals, have high social and economic impacts on other sectors as well, such as trade, travel and tourism for example. Overall, infectious diseases jeopardize current private and public investments in livestock; the related risks discourage future investments in the sector. Beyond production and productivity in animal productions, investments should ensure they address risk at the human animal environmental interfaces, and embed One Health options to safeguard health in the broader context of sustainable development. For this to happen, it is essential to have an accurate understanding of the multiple economic and technical dimensions of impacts of animal diseases and opportunities of animal health to ensure investments in livestock being most efficient towards prevention and preparedness, reducing high potential costs of persistent and emerging infectious diseases, increasing healthcare savings and profits associated with animal production. Despite the progress of knowledge and awareness in the area of public health in relation to livestock and aquaculture development, much remains to be done in better integrating animal health and welfare, climate change, food security, nutrition, antimicrobial resistance and food safety aspects into livestock policies and investment decisions.

**Keywords:** Animal Health and Welfare, One Health, Food Security and Food Safety, Global Health Security, veterinary public health

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**SC3.01 - EFFECT OF CULLING DETERMINED ULTRASONOGRAPHICALLY ON THE NUMBER OF OVINE PULMONARY ADENOCARCINOMA CASES IN 14 SHEEP FLOCKS**

Philip Scott1, Chris Cousens2
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**Background:** Currently, there is no commercial diagnostic test to identify individual sheep with OPA tumour(s). The present study employed high-throughput trans-thoracic ultrasound examination of both sides of the chest using a 6.5 MHz microconvex probe connected to a real-time, B-mode ultrasound machine to detect sonographic changes consistent with OPA in 14 commercial flocks, and at a subsequent ultrasound examination 9-12 months later. The objective of the present study was to document the effect of culling all sheep with sonographic findings consistent with ovine pulmonary adenocarcinoma (OPA) tumours on the subsequent prevalence of disease. OPA was diagnosed on trans-thoracic ultrasonography as widely reported in the scientific literature by the authors; the sensitivity has previously been shown to be 0.94 and specificity 1.0; the positive predictive value was 0.81, and the negative predictive value was 1.0.

**Methods:** The ultrasonographic diagnosis of OPA was based upon previous reports (Scott and Gessart, 1998; Cousens and Scott, 2015). Eighty to 120 sheep were examined per hour. Video recordings of all lung and pleural lesions were captured using Elgato software.

**Results:** 229 of 12120 (1.9%) adult sheep in 14 commercial flocks were diagnosed with OPA tumour(s) based upon ultrasound examination at an initial whole flock screening, and 114 cases 9-12 months later. Most affected sheep were sold for slaughter therefore laboratory confirmation was not possible.

**Conclusion:** This is the first study to report the reduced prevalence of naturally-occurring OPA in adult sheep in commercial flocks 9-12 months following removal of all suspect positive cases based upon the presence of tumours identified by trans-thoracic ultrasonography. These data are encouraging but represent only the first year of a 3-5 years’ study and must be evaluated carefully; results from the first year of the study will soon be available from a further 21 flocks. Nonetheless, high throughput trans-thoracic ultrasonography may be a cost-effective method to reduce the flock prevalence of OPA; typical veterinary ultrasound scanning costs were around 1 Euro per sheep.

**Keywords:** Sheep, Ultrasonography, Ovine pulmonary adenocarcinoma

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**SC3.02 - MICROBIOMES ASSOCIATED WITH BOVINE PERIODONTITIS AND ORAL HEALTH**

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**Background:** Periodontitis is an infectious polymicrobial, immuno-inflammatory disease of multifactorial aetiology that has an impact on the health, production and welfare of ruminants. The natural occurrence of periodontal lesions in sheep and cattle has been recorded in several countries and in several epidemiological contexts.

**Methods:** The objective of the present study was to determine the microbial profiles present in the gingival sulcus of cattle considered periodontally healthy and in the periodontal pocket of animals with periodontitis lesions using high-throughput bacterial 16S rRNA gene sequencing.

**Results:** Two-hundred dental arches of bovines were examined and the criteria for the diagnosis of periodontitis was the presence of gingival retraction, the existence of a periodontal pocket greater than 5 mm deep and suppuration. Subgingival biofilm samples of 40
bovines with periodontitis and 38 periodontally healthy were collected. Sequencing generated over 4 million reads and after quality filtering and trimming 992913 reads remained for analysis. After random subsampling at 50%, 1923 OTUs were identified and classified into 395 genera or higher taxa. Principal component analysis revealed differences between the bovine oral microbiomes in oral health and periodontitis. Healthy samples clustered together and showed lower intra-sample variability compared to the periodontitis samples. The difference between microbial profiles of the two groups was statistically significant (p < 0.001, F = 5.30, PERMANOVA). No statistically significant differences were observed in species richness/diversity of healthy and periodontitis microbiomes. On average, healthy samples from bovines harboured 238 OTUs (SD 158, range 66-698), while the periodontitis samples contained 245 OTUs (SD 114, range 79-577). At the genus level, from 395 genera or higher taxa, 45 taxa were statistically significantly different between the two groups (p<0.05). Of these, 25 taxa had LDA score above 2 and the majority (17 of 25 taxa) were associated with disease. The most discriminative taxa in the samples of healthy animals were Gastranaerophilus, Planililus, Burkholderia and Arcobacter. In animals with periodontitis, the most prevalent taxa were Eiusimicrobium, Synergista, Propionivibrio, Fusobacterium, Wolinella, Paraphyromonas, Candidatus, Prevotella, Firmicutes (uncultured), Bacteroides and Treponema.

Conclusion: The present study is the first to use high-throughput 16S rRNA gene sequencing to compare bacterial populations present in oral health and bovine periodontitis and revealed that statistically significant difference exists between the microbiome in bovine oral health and periodontitis, with populations showing 72.6% dissimilarity. No previous study has characterised the bovine oral microbiome in such detail. In conclusion, the two groups of bovines evaluated had different microbial profiles, but the diversity of the bacteria found in health and periodontitis were similar and bacteria recognised as periodontal pathogens showed increased abundance in disease. In this context, the main components of bacterial homeostasis in the biofilm of healthy sites and of dysbiosis in periodontal lesions provide unprecedented indicators for the evolution of knowledge about bovine periodontitis.

Keywords: Cattle, high-throughput sequencing, microbiome, bacteria, periodontal disease

SC3.03 - RISK FACTORS ASSOCIATED WITH THE PREVALENCE OF PERIODONTAL LESIONS IN SLAUGHTERED CATTLE IN THE WEST OF SCOTLAND

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1São Paulo State University (Unesp), School of Veterinary Medicine, Campus Aracatuba, Aracatuba/BRAZIL, 2School of Veterinary Medicine, University of Glasgow, Glasgow/UNITED KINGDOM, 3Oral Sciences Research Group, Dental School, University of Glasgow, Glasgow/UNITED KINGDOM

Background: Periodontitis is an inflammatory disease resulting from dysbiosis of the bacterial microbiota, with a negative impact on systemic health. As a polymicrobial infection, its aetiology and pathogenesis are associated with the presence of a biofilm and periodontal pathogens. Usually of a chronic nature, it is a multifactorial disease that shares common aetiological factors in man and in several species of animals. In livestock, the challenges of clinical diagnosis within herds makes it very difficult to undertake epidemiological surveys and to assess the possible risk factors involved. In periodontal disease in bovines, epidemiological studies are important to describe the health status of populations, elucidate the aetiology of the disease, identify risk factors, prevent its occurrence and design control measures. In this context, the present study was conducted to evaluate some possible risk factors associated with the occurrence of periodontal lesions in cattle slaughtered in the West of Scotland.

Methods: From 250 cattle examined in an abattoir in the West of Scotland, 35 dental arches with periodontal lesions and 40 considered periodontally healthy were selected. Logistic regression analysis was used to evaluate the association between the independent variables, gender, age and breed with periodontitis.

Results: Of the seventy-five slaughtered cattle evaluated in this study, 66 were female and 9 were male, with an overall average age of 5.3 years (range 1.4 to 16.5 years). The average age of animals with periodontitis was 7.4 years (range 1.5 to 16.5 years) and for periodontally healthy animals the average age was 2.9 years (range 1.4 to 10.6 years). A wide range of breeds was identified, the most prevalent being Limousin, Holstein-Friesian and Aberdeen Angus. For statistical analysis, the 75 animals were grouped into two categories, dairy (n=20) or beef (n=55) cattle. Age of animals was significantly associated with the presence of periodontal lesions. For every year of age, cattle were 1.53 times likely to have periodontitis (p<0.001). Gender was not significantly associated with periodontitis (p=0.887). Regarding the breed type, beef cattle were 0.36 times likely to have periodontitis compared to dairy cattle. However, the p-value was not significant (p=0.054). It is likely that bovine periodontitis has a significant impact on the welfare of affected animals, as it can be a painful, chronic condition leading to difficult feeding and consequent loss of body condition and weight, increased susceptibility to disease and reduced productivity. Oral pain may have only subtle effects on cattle behaviour, and thus the disease is easily ignored or neglected.

Conclusion: Logistic regression analysis demonstrated that periodontitis lesions are more prevalent with increasing age of cattle. We hypothesise that increasing age may not represent a risk factor outright for the development of bovine periodontitis but may simply reflect the cumulative exposure over time to environmental risk factors.

Keywords: Cattle, Logistic regression analysis, Risk factors, periodontitis

SC3.04 - CELLULAR IMMUNE RESPONSE IN THE INTESTINAL MUCOSA OF CLINICALLY HEALTHY BABY ALPACA (VICUGNA PACOS)

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Background: Introduction South American Camelids represent an important social, economic, cultural and scientific source in the Peruvian highlands. Peruvian baby
alpacas are susceptible to enterotoxaemia with high mortality ratios. Enterotoxaemia is caused by *Clostridium perfringens* type A which has been shown to be associated to *Eimeria macusaniensis* and E. coli coinfections. Gamma interferon (γIFN) and interleukin (IL) 12 stimulate Th1 cells differentiation by activating transcription factors T-bet, STAT1 and STAT4. T-bet expression in naïve CD4+ T lymphocytes is stimulated in response to antigen presentation and γIFN. γIFN activates STAT1 which enhances T-bet expression. T-bet promotes γIFN production through direct activation of the γIFN gene transcription. The ability of γIFN to stimulate T-bet expression and from T-bet to enhance γIFN transcription determine a positive amplification loop that drives the differentiation of T lymphocytes towards the Th1 phenotype. IL-12 contributes to Th1 differentiation by binding to antigen-stimulated CD4+T cells and by activating STAT4, which further enhances γIFN production. Th1 lymphocytes produce γIFN, TNFα and IL-2.

**Purpose** The aim of this study was to quantitatively estimate the gene expression of the transcriptional factors (T-bet, STAT1, STAT4) and the cytokines (IL-12, IL-2, γIFN, TNFα) involved in the activation and differentiation of intestinal mucosa Th1 lymphocytes in clinically healthy baby alpacas from three age-groups of 1-8, 10-21 and 22-47 days-old, which were bred in flocks with natural grazing in the Southern Peruvian highlands.

**Methods:** Two centimeters-intestinal samples were obtained from the jejunum middle portion of the alpaca crias at IVITA Marangani (Cusco), which were stored at -196°C and processed at the School of Veterinary Medicine from San Marcos University (Lima, Peru). Total RNAs were extracted and RT-PCR real time was performed. The quantitative mRNA expression was estimated by comparing to the expression profiles in the calibrator (fetus) by the 2^(-ΔΔCt) method using GAPDH as endogenous control.

**Results:** STAT1, T-bet, IL-2 and TNFα expression were shown increased with age in the eldest group, while γIFN expression exceeded in a hundred-fold the calibrator’s (p<0.0004). STAT4 and IL-12 expression were not significant (Fig.1).

**Conclusion:** The expressions of both transcriptional factors activated by γIFN, T-bet (p<0.05) and STAT1 (p>0.05) increased with age, likewise the cytokines involved in the Th1 immune response. Nevertheless, the participation of NK, cytotoxic and γδT cells cannot be excluded in γIFN production. The effect of intracellular parasites and commensal bacteria which promote the stimulation of dendritic cells through TLRs activation and hence the production of γIFN might be considered.

**Keywords:** intestinal mucosa, alpaca, cellular immune response

**SC3.05 - PREVALENCE AND ULTRASONOGRAPHIC APPEARANCE OF PLEURAL PATHOLOGIES IN ADULT SHEEP**

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**Background:** The objective of this study was to determine, using trans-thoracic ultrasonography, the prevalence of pleural pathologies of likely clinical significance in adult sheep. These data were collected as part of a study to investigate whether culling all suspected cases of ovine pulmonary adenocarcinoma detected sonographically could eliminate it from United Kingdom sheep flocks. Detailing pleural pathologies in apparently healthy sheep could help determine the clinical significance of such lesions whilst monitoring over several weeks/months would detail progression of the disease process and allow objective assessment of the treatment regimens.

**Methods:** 62,310 sheep adult sheep in the United Kingdom were screened for OPA from January 2016 to October 2017 using a 6.5 MHz microconvex probe connected to a real-time, B-mode ultrasound machine. Trans-thoracic ultrasonographic examination of both sides of the chest was undertaken by the same operator (PS) at a rate of approximately 80-120 sheep per hour. For the purpose of this study significant pleural lesions were defined as an abscess (circular, heterogeneous echotexture and encapsulated lesion >5 cm diameter) and pleurisy where the >2cm thick exudate extended over the majority of the ventral lung field on one or both sides of the chest. All ultrasound examinations were recorded using Elgato software. Sheep with pleural exudate were treated with antibiotics as determined in the farm’s veterinary flock health plan (most often a single intramuscular injection of long-acting oxytetracycline); those with encapsulated abscesses were not treated. No thoracocentesis sampling was undertaken.

**Results:** 202 of 62,310 (0.3%) sheep had significant pleural pathology identified ultrasonographically. Large >5 cm pleural abscesses were recorded in the most ventral area of the chest in 99 sheep often with adjacent pleurisy measuring 2-30 mm thick, 103 adult sheep (0.17%) had >20 mm thick pleural exudate with two lesions extending to16 cm diameter. However, heteroechogenic circular lesions were often identified within the fibrinous matrix but without an obvious anechoic capsule. Sequential examination of four sheep with >6 cms’ exudate showed marked reduction within 2-4 weeks, then a 2-4 cm diameter encapsulated heteroechogenic area after 6-8 weeks which had the sonographic appearance of an abscess.

**Conclusion:** Extensive pleural pathology is encountered in a low percentage of apparently healthy adult sheep during whole flock ultrasonographic examination. The finding of a single large abscess within the ventral pleural space may be interpreted that such abscesses develop following organisation/partial resorption of extensive and contaminated pleural exudate. This proposal is supported by the commonly observed transitory state from organising exudate to an abscess.
Keywords: Ultrasonography, Sheep, Lung pathology, Pleurisy

SC3.06 - PERIPHERAL DISTRIBUTION OF PRIONS IN PIGS INFECTED WITH SHEEP PASSED BOVINE SPONGIFORM ENCEPHALOPATHY AGENT

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Background: Transmissible spongiform encephalopathies (TSEs) or prion diseases are a group of neurodegenerative and fatal disorders of animals and humans caused by the accumulation of PrPsc, an abnormal isoform of a physiologically encoded protein (PrPc), in the Central Nervous System (CNS). Since the outbreak of Bovine Spongiform Encephalopathy (BSE) in the 1980s and its subsequent association with the appearance of variant Creutzfeldt-Jakob (vCJD) in humans, the transmission of prion diseases between animals and humans has become a public concern. BSE can be efficiently transmitted to pigs by the intracerebral route. While infectivity and/or abnormal PrP accumulation have been reported in the CNS in BSE-infected pigs, the ability of the agent to replicate in peripheral tissues has not been deeply studied. In addition, natural cases of BSE have been reported in small ruminants, and experimental evidence has demonstrated that sheep adapted BSE (Sh-BSE) propagates more efficiently in pigs than cattle BSE.

Methods: In this study we characterized the presence of prions in a panel of tissues (brain, brachial nerve, sciatic nerve, mesenteric lymph node, oculomotor muscle, ileum, spleen and white blood cells) collected from experimentally Sh-BSE-infected pigs at clinical stage of the disease [1]. Considering that conventional assays have a limited sensitivity, and could fail to detect PrPSc in very low levels, we performed a comparative protein misfolding cyclic amplification (PMCA) study and a bioassay in transgenic bovineized mice to detect PrPSc. Both methods allow the detection of minute amounts of prions in tissues and fluids from infected individuals.

Results: Using PMCA we detected the presence of the Sh-BSE agent in the brain, lymphoid organs, nerves, ileum, and oculomotor muscle from all 5 analyzed pigs. Surprisingly, PrPSc positivity was also found in white blood cells from one pig using this method. PrPSc infectivity was demonstrated in the CNS, peripheral nervous system, oculomotor muscle and mesenteric lymph nodes by bioassay in bovinized transgenic mice.

Conclusion: We previously demonstrated that Sh-BSE is efficiently transmitted to pigs after intracerebral challenge, and that PrPSc in those animals distributes to a wide variety of peripheral tissues [1]. Here we show that PrPSc is also present in tissues in which prion deposition is not detected by conventional techniques and, for the first time, the detection of BSE-derived agents in the blood of prion-infected pigs is reported. However, further studies to evaluate the oral exposure of pigs to Sh-BSE would be necessary to determine a potential risk of transmission in this species. These data and several other studies support the continuation of the feed ban measure implemented to prevent the entry of BSE agent in the feed chain.

SC8 Short Communications 8
Monday, May 7, 2018
17:00 – 18:00

SC8.01 - PERIODONTOPATHOGENIC MICROBIOTA ASSOCIATED WITH CAPRINE PERIODONTITIS

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Background: Periodontitis is a multifactorial infectious disease caused by a complex of bacterial species that interact with the tissues of the host and lead to the release of a wide range of inflammatory mediators, which compromise the integrity of the supporting tissues of the teeth.

Methods: The present study aimed to identify 23 potential periodontopathogenic microorganisms, through polymerase chain reaction (PCR), frequently involved in human periodontitis and other animals, in materials obtained from periodontal pockets of goats with depth ≥ 5 mm (n=22) and gingival sulcus of periodontally healthy animals (n=22). The clinical status of goats of different ages was established after intraoral examination and periodontal evaluation. For the definition of sites with periodontitis, the presence of periodontal pocket, diagnosed by site probing, presence of gingival recession, suppuration, bleeding and mobility of the dental unit were used as parameters. For the definition of periodontally healthy sites, gingival visualization was used as parameter, without visible inflammation and absence of periodontal pocket.

Results: In the samples of sites with periodontitis were identified Fusobacterium nucleatum (81.8%), Tannerella forsythia (63%), Fusobacterium necrophorum (63%), Campylobacter rectus (59%), Eikenella corrodens (45%), Prevotella buccae (31.8%), Actinomycyes israelii (27%), Porphyromonas gingivalis (18%), Prevotella nigrescens (18%), Prevotella loescheii (18%), Treponema denticola (13.6%), Treponema maltophilum (13.6%), Porphyromonas endodontalis (13.6%), Prevotella intermedia (9%), Prevotella melanogenicena (9%), Treponema amylovorum (9%), Enterococcus faecium (9%), Dialister pneumosintes (4.5%) and Aggregatibacter actinomycetemcomitans (4.5%). In the sites without lesions, Fusobacterium nucleatum (68%), Tannerella forsythia (27%), Actinomycyes israelii (27%), Prevotella nigrescens (22.7%), Enterococcus faecium (22.7%), Fusobacterium necrophorum (18%), Campylobacter rectus (13%), Eikenella corrodens (9%), Porphyromonas endodontalis (4.5%), Treponema amylovorum (4.5%) and Prevotella loescheii (4.5%) were identified.
**Conclusion:** In the present study, considering the clinical aspects surveyed, such as the presence of periodontal pocket, gingival recession, supppuration and mobility of the dental unit, a statistical association was observed between the presence of periodontopathogens frequently involved in cases of severe periodontitis, with loss of connective tissue, periodontal ligaments and alveolar bone resorption, such as Porphyromonas gingivalis, Prevotella intermedia, Treponema denticola, Tannerella forsythia, Dialister pneumosintes and Aggregatibacter actinomycetemcomitans. The identification of potential periodontopathogenic microorganisms at sites with periodontitis in goats reinforces the possible infectious and polymicrobial etiology of the disease.

**Keywords:** periodontopathogens, goats, periodontitis, dysbiosis

**SC8.02 - CO-OCCURRENCE OF PERIODONTALITIS AND DENTAL WEAR IN DAIRY GOATS**

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**Background:** Periodontalitis and excessive tooth wear are considered two of the most important pathologies that affect periodontium and teeth of small ruminants. Often neglected, they occur in several regions of the world, affect livestock production, with reduced animal shelf life, early disposal, and increased replacement cost.

**Methods:** The present study aimed to describe the co-occurrence of periodontalitis and excessive wear on the incisive and masticatory teeth in lactating goats. These parameters were evaluated by exploratory clinical examination of the oral cavity and adjacent tissues in 150 goats, of which 79 were aged between 13 and 36 months and 71 with more than 36 months. The intraoral clinical examination was performed with the aid of a labial and lingual retractor, a mouth opener and flashlight, thus allowing visualization of the dental hemiarches, with the exception of the lingual aspect of the mandibular teeth. Scores from 0 to 3 were attributed to the presence of gingival recession, supragingival biofilm and dental crown wear, with scales according to the severity of the lesions.

**Results:** In the 150 goats evaluated, the occurrence of periodontal lesions, characterized by gingival recession in at least one tooth, was 70.7% (106/150), from which 28.0% (42/150) were in the incisors and 62.0% (93/150) in the masticatory teeth. The highest occurrence of lesions and a greater degree of severity was observed bilaterally in the third premolar and first maxillary molar. In the examination of teeth, 96.0% (144/150) of the animals presented levels of severity from 1 to 3. In 40.0% (60/150) of the animals occurred wear on the incise and masticatory teeth together, 37.3% (56/150) only in masticatory teeth and 18.6% (28/150) only in incisors. Goats with more than 36 months were the most affected by gingival recession, with higher frequency and degree of severity in the teeth (p=<0.001). In this same group there was more occurrence of wear and severity in the masticatory teeth (p= <0.001; IC= 0.40). In relation to the occurrence of gingival recession and wear on incisor teeth, there was an inverse relation for the occurrence of factors (p=0.03 and p=0.04, respectively); however, in chewing teeth there was a correlation between the occurrence of gingival recession and wear (p=0.04 and p=0.04, respectively). Goats with higher dental biofilm score presented higher frequency and degree of gingival recession severity in masticatory teeth (p=0.001 and p=0.03, respectively) and higher degree of wear of the incisors (p=<0.001).

**Conclusion:** Dental problems in goat breeding are not part of the common concern of rural producers and professional, and the reasons for this are most likely due to the fact that they are usually silent, chronic and undiagnosed by routine procedures. The results obtained in the investigation of periodontitis and excessive wear of the dentition in goats contribute to the elucidation of the epidemiology and etiopathogenesis of diseases in goats herds. Although they are distinct diseases, they are probably the result of some common environmental factor.

**Keywords:** periodontalitis, dental wear, dental biofilm, gingival recession, dairy goats

**SC8.03 - CORRELATION BETWEEN UTERINE BLOOD FLOW AND UTERINE INVOLUTION DURING PUERPERAL PERIOD IN HEALTHY EWES**

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**Background:** Considering the importance to establish early diagnostic methods for the evaluation of puerperal changes in sheep, monitoring this period may be essential to avoid a decline in reproductive efficiency. The aim of this study was to determine the characteristic in uterine blood flow changes and correlate this physiological variables with time of uterine involution observed through Doppler ultrasonography during the postpartum period.

**Methods:** Twenty adult multiparous Santa Ines ewes were examined by transabdominal ultrasound performed with the ACUSON S2000® (Siemens®, Munich, Germany),
convex multi-frequency transducer (4C18; 1 - 4.5 MHz; Siemens®, Munich, Germany), at the immediate postpartum moment (M0) and subsequently every 48 hours through 30 days (M15). Doppler color flow imaging enabled the visualization of uterine vascular characteristics; presence or absence of vascularization, type of flow (arterial, venous or turbulent and mixed) and type of vessel (peripheral, central, or diffuse). The Doppler characteristics were compared between times by ANOVA and correlate with the puerperal time by Pearson method.

Results: The blood uterine flow was observed in all animals, but had a decrease and was less visible after the 18th day postpartum when compared with initial postpartum moments (Fig 1), and also uterine vascularization was significantly lower (p = 0.023 r = 0.50) at the 30th day (Fig 2). Furthermore, the type of flow mixed was the most visualized, and peripheral vessel was more evidence.

Conclusion: This presented data did not present significant variations (p> 0.05) during the postpartum period. Also, it is important to mentioned that the ability to measure changes in indices of uterine blood flow provides a promising diagnostic tool for assessing the status of uterine involution during the physiological postpartum period in ewes. Financial support: FAPESP-2015/18519-8

Keywords: puerperal period, Sheep, reproductive efficiency, Doppler

SC8.04 - EVALUATION OF ESTRUS SYNCHRONIZATION PROTOCOLS AND PREGNANCY ASSOCIATED GLYCOPROTEINS AS EARLY PREGNANCY MARKER IN BEETAL GOATS

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Background: Small ruminants’ production is known to play a significant role in improving of socio-economic standards of common and poor income communities. During the last two decades growth rate of goat population has increased by 48% (37 million heads to 70.3 millions) which is highest among all domesticated livestock like cattle, buffalo and sheep (Economic survey of Pakistan 2015-16). Successful estrous synchronization and early pregnancy diagnosis may contribute to increased small ruminant production in developing countries. The objectives of present investigation were to compare the effect of OvSynch protocol with conventional flushing based breeding during breeding season and to compare Progesterone (P4) and Pregnancy associated proteins (PAGs) profiles with the gold standard tool of ultrasonography for early pregnancy diagnosis.

Methods: Multiparous beetal goats were divided into i) OvSynch group ii) flushing-based synchronization group (n=45). In OvSynch group the first GnRH (4 μg) injection analog was administered intramuscularly on d0, followed by PGF2α (3.75 mg) injection on 7 days later. A second GnRH (4 μg) injection was then injected two days later, on 9th day. Breeding was facilitated by introduction of bucks 16 hours later. Concentrate was used for flushing in the control group @500 g/day for 3 weeks. After flushing abrupt introduction of bucks was done for natural mating.

Results: Estrus response was 88 % and 93 % in control and OvSynch group respectively. Pregnancy was diagnosed by serum P4 profile, transabdominal ultrasonography and serum PAGs on 25th post-mating. Serum P4 profile was 11.4±0.85 (Mean± SEM; ng/ml) in Ovsynch group and 9.86±0.6 in control group (Mean± SEM; ng/ml). There was significant (p<0.001) PAGs concentrations in pregnant group as compared to non-pregnant group in 25th days post-mating. Pregnancy rate was higher (80%) in OvSynch group as compared to flushing 67% (P = 0.16, Chi square-test). Prolificacy rate was also significantly higher in OvSynch (124%) in comparison with flushing group having 91%. Similarly litter size was 1.36 vs 1.54. Time frame for kidding was 40 days in flushing group but concentrated (within 16 days) in OvSynch group. Twins rate was significantly higher (P=0.012) in OvSynch group (71%) as compared to flushing based synchronization group (28%).

Conclusion: On the basis of these results it can been concluded that flushing and OvSynch treatments are comparable synchronization methods for beetal goats during the breeding season as pregnancy rate, and prolificacy rate was higher in OvSynch group with marked reduction in kidding duration. PAGs are as viable tool as ultrasonography for early pregnancy diagnosis in beetal goats on day 25 post-mating for decisive reproductive management.
The expression of cytokines in scrapie affected sheep is of particular interest in astroglial and microglial populations as main components of the host immune response in prion disease; reliable conclusions about the process of neurodegeneration or maybe even about these glial populations as potential therapeutic targets would be possible to be drawn.

**SC8.06 - VIDEOASSISTED RUMENOSTOMY IN SHEEP**

Gabriela Melo Alves Dos Santos1, Adriana Elizabeth Cordeiro Barbosa1, Luisa Pucci Bueno Borges1, Hanna Lyce Magno De Morais1, Barbara Da Conceição Guilherme1, Lucia Da Silva Siqueira1, Daniella Kaisa De Oliveira Bezerra1, Carmen Silvia Pantoja Pereira1, Renato Abrantes De Oliveira1, Rodrigo Dos Santos Albuquerque1, Renato Sílvia Gonçalves Mariano2, Walter Ricardo R. Vicente3, Juliana Cristina De Castro Budel1, André Guimarães Maciel E Silva1, Marco Augusto Machado Silva1, Felipe Farias Pereira Da Câmara Barros4, Pedro Paulo Maia Teixeira1

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**Background:** The aim of this study was to establish a minimally invasive technique of videoassisted rumenostomy in sheep.

**Methods:** Five 8-month-old sheep were submitted to exploratory videolaparoscopy which two portals of 10 mm and pneumoperitoneum of 5 mmHg were used. The portals were established by open technique. After the pneumoperitoneum was undone, the rumen was lifted until the access of the second portal, near the abdominal wall, aiding the fixation with conventional Allis forceps. A puncture-incision was made in the rumen with the scalpel, through which a Foley probe number 18 was placed. After the cuff was insufflated, a purse string suture were performed and two cruciate suture pattern stitches for rumenopexy, already performing the synthesis of the muscular layer. Dermothaphy was performed with horizontal mattress pattern on the sides of the probe. A single application of long acting oxytetracycline 50 mg/kg was administered, rescue analgesia with tramadol (5mg/kg).
Figure 1: procedure of videoassisted rumenostomy, in which the rumen is lifted (A) and fixated with Allis forceps to perform the incision with a scalpel (B) followed by placement of a Foley probe (C) and its fixation in the rumen (internal view of abdominal cavity) (D)

Figure 2: Animal after videoassisted rumenostomy procedure (A) and collection of ruminal content (B)

Results: In the procedure time 13 ± 6.2 min, it was possible to have good access of the rumen. All animals presented satisfactory recuperation, without rescue analgesia, returning to feed soon after anesthetic recovery. It was established the possibility to collect ruminal content, without extravasation and good recovery of the surgical wound.

Conclusion: The minimally invasive technique is the most indicated procedure, with possibilities of probe placements, causing less injuries and conserving the quality of life of animals, serving either as an experimental model or in the therapeutic cases.

Keywords: Rumen access, Ram, laparoscopy

CT6.01 - THE DRUGS DON'T WORK! RATIONAL SELECTION OF DRUG THERAPIES FOR BEHAVIOUR PROBLEMS

Jonathan Bowen
Department Of Clinical Sciences, Royal Veterinary College University of London, Hertfordshire/UNITED KINGDOM

Abstract: A decade ago, the behavioural medicine pharmacopoeia was restricted to a small number of drugs that were licensed or supported by limited peer-reviewed evidence. This has expanded to include a much wider range of the drugs used in human medicine, with a variety of mechanisms of action, leading a challenge in the appropriate selection and application of biological therapies. This lecture will present a brief overview of the drug classes traditionally used in behavioural medicine and how they work, before moving on to the more recently used drugs and a contemporary theoretical basis for how they can be integrated into behavioural therapy. It will also present an approach to drug selection for behavioural problem cases as well as strategies for dealing with therapeutic failure (switching drug and augmentation). Common reasons for apparent therapeutic failure, such as the delayed onset of action of many psychotropic drugs, will also be covered.

Keyword: Behavior drugs rational use

CT6.02 - WHY DOES MY DOG BITE ME?: AGGRESSION TOWARD FAMILY MEMBERS

Jaume Fatjo Rios
Department Of Psychiatry And Legal Medicine, Universitat Autonoma de Barcelona, Barcelona/SPAIN

Abstract: During decades, most cases of aggression towards family members were considered dominance-related. Nevertheless, since the turn of the century an increasing number of specialists in behavioural medicine suggest that canine aggression towards family members would be mainly related to fear and conflict.

There are two main controversies around dominance in dogs: one, more scientific, related to the existence of dominance-relationships in dogs and another one around the practical implications of treating aggressive dogs following the traditional paradigm of considering the owner as the leader of the pack. Some trainers and also some so-called dog experts still support the treatment of owner-directed aggression using confrontational strategies, like physical punishment, shock collars and the alpha-role technique, to name just a few. However, these techniques are not supported by current research on canine behaviour, could damage the human-animal bond and deliberately put the family at risk of being bitten.

Most experts and behavioural medicine international associations recommend the use of non-confrontational techniques and positive reinforcement to treat owner-directed aggression using confrontational strategies, like physical punishment, shock collars and the alpha-rol technique, to name just a few. However, these techniques are not supported by current research on canine behaviour, could damage the human-animal bond and deliberately put the family at risk of being bitten.

Most experts and behavioural medicine international associations recommend the use of non-confrontational techniques and positive reinforcement to treat owner-directed aggression in dogs. That is not to say that there is no scientific debate on certain aspects of social behaviour in dogs. Recently, some scientists have pointed out that canids, including dogs, do show social asymmetries and dominance-relationships. In any case, they cannot be considered neither an expression of formal dominance nor a behavioural trait, which are in fact the two concepts that support the old-fashioned approach to owner-directed aggression.

The treatment of owner-directed aggression often
includes adjunctive measures like castration and biological therapies. In recent years there is increased evidence that castration could be contraindicated in certain cases of owner-directed aggression. Regarding drugs, those improving impulse control, like the SSRIs, are considered the first-line treatment for owner-directed aggression, particularly when there is a lack of warning signals prior to an attack.

CT6.03 - ARE INDOOR CATS PETS OR PRISONERS? THE EFFECT OF THE ENVIRONMENT ON THE WELLBEING OF CATS

Jonathan Bowen
Department Of Clinical Sciences, Royal Veterinary College University of London, Hertfordshire/UNITED KINGDOM

Abstract: Evolution has programmed many of the behavioural needs of cats, which are relatively inflexible. Domestication has had no effect on these needs, with pet cats showing almost identical behavioral patterns to their feral and wild counterparts. This leads to potential problems when these needs are constrained by the environment, especially when cats are kept indoors and are thereby made wholly dependent on the routines and lifestyles of their owners. It is therefore no surprise that the main source of stress and behavioural problems in cats is the mismatch between needs and environment, and that this can become so severe that it even leads to health impacts. This talk will discuss the impact of environmental constraints on the wellbeing of cats, and how this can lead to problem behaviour. Simple tools will be presented for the assessment of a cat’s environment, together with interventions to improve it (environmental enrichment).

Keyword: Feline environmental enrichment

CT6.04 - DOES SENILITY BREED CONTEMPT?: GIVING DOGS WITH COGNITIVE DYSFUNCTION A SECOND CHANCE

Jonathan Bowen
Department Of Clinical Sciences, Royal Veterinary College University of London, Hertfordshire/UNITED KINGDOM

Abstract: With the healthy lifespan of dogs being extended by improved nutrition and healthcare, many more dogs will live long enough to experience cognitive dysfunction (CCD). Given that brain ageing apparently occurs at a similar rate in all dog breeds and, unlike other age-related conditions such as osteoarthritis, is unrelated to physical size, owners may be faced with the challenge of the mental deterioration of an otherwise fit and healthy pet. This can be very hard to come to terms with, especially when it leads to euthanasia, and we have evidence of the impact that CCD can have on the human-animal bond. This talk will provide an overview of the impact of canine cognitive dysfunction (CCD) on the dog and its owners, together with the available treatments for this condition. Screening and early detection are essential to successful treatment of CCD, and this will also be discussed.

Keyword: Canine Cognitive Dysfunction

CT6 Exotic Pets
Monday, May 7, 2018
09:00 – 17:00

CT6.06 - HOW TO ANAESTHETISE RABBITS SAFELY
Livia Benato
CityVets, Exeter/UNITED KINGDOM

Abstract: Anaesthesia in rabbits presents similar challenges than in other companion animals such as cats and dogs. Knowledge of the basic needs of a rabbit and a safe protocol can reduce the length of the procedure, the risks under general anaesthesia and the mortality rate. Sedation is generally suggested in order to perform quick medical procedures or diagnostic investigations. This reduces the length of the procedure and the stress associated with the handling. Anaesthesia is indicated for surgical procedures and for longer diagnostic investigations. These days several protocols are reported with large margin of safety. Physical examination of the rabbit should be performed prior to the procedure and the anaesthesia risks carefully considered. The more common anaesthesia risks in rabbits are generally stress and hypoxia. Stress can be caused by several factors such as travelling, handling, pain, chronic diseases, predators and a new environment while hypoxia can be caused by breath holding, small lung capacity and subclinical lung diseases. Once the rabbit has been induced, anaesthesia is then maintained using isoflurane or sevoflurane via airway devices such as E.T. tube and laryngeal mask or V-gel ® supraglottic device. In rabbits, withdrawal and palpebral reflexes are poor indicators of the anaesthesia depth but generally absent with a good plane. Heart rate and respiratory rate can easily be assessed using a paediatric stethoscope or an oesophageal stethoscope. Anaesthesia plane can also be monitored using several monitoring tools, depending on the availability, such as pulse oxymeter, capnography, doppler system and electrocradiography. Constant monitoring of the body temperature is also important to prevent hypothermia. The perioperative care of the rabbit patient is paramount for a successful outcome. Fluid therapy is important to restore hydration and prevent gastric and caecal impaction while a multi modal pre-empitive analgesia approach a combination of NSAIDs and opioids is indicated to prevent discomfort and ensure a smooth anaesthetic procedure. Prokinetics such as metoclopramide and cisapride and H2 inhibitor such as ranitidine can be given to promote normal gut motility and faecal output, and prevent gastric ulcers. Supportive care such as additional heating and assist feeding should be provided.

Keyword: Sedation, anaesthesia, monitoring, perioperative care

CT6.07 - UPDATING ADRENAL GLAND DISEASE IN FERRET
Jaume Martorell
Hospital Clinic Veterinari Universitat Autònoma de Barcelona, Cerdanyola del Vallès/SPAIN

Abstract: Hyperadrenocorticism is one of the most common diseases in ferrets. This disease is not caused by an increase in cortisol, but an increase in sex hormones, that’s why it is not called Cushing’s syndrome in this species. It affects to medium and old males and females,
especially if they have been neutered at an early age. There is an excessive development of the reticulated or internal zone of the adrenal gland cortex. The causes are unknown, but early neutering, diet based on feed, inbreeding and overexposure to light periods are considered the main hypotheses. The most frequent diagnosis is adenocortical adenoma, followed by nodular hyperplasia and, less frequently, adrenal adenocarcinoma. Metastases are rare, although they can affect the lung, however some tumors can invade surrounding tissues, such as the liver and the “vena cava”. Many pharmacological treatments have been proposed for this disease, but all are intended to decrease the hormonal influence and the clinical signs: androgen and estrogen blockers, melatonin, GnRH analogues [leuprolin, deslorelin], the latter being the most effective. Unfortunately if there is a tumor, in one or both glands, medical treatment does not act on cell growth. Despite combining medication with surgery, the recurrence of the disease is possible.

**C6T.08 - HOW TO MANAGE SNUFFLES IN RABBITS**

**Livia Benato**
CityVets, Exeter/UNITED KINGDOM

**Abstract:** Respiratory disease due to infectious disease is a common presentation in rabbits. Knowledge of the anatomy of the rabbit’s respiratory tract is important to better understand the complexity of the disease. Predisposing factors leading to respiratory disease are generally related to suboptimal husbandry, poor nutrition and chronic diseases. In case of stress, irritation of the airways or immunosuppression, the respiratory microbial flora can become pathogenic leading to snuffles and other respiratory diseases. Respiratory disease in rabbit is caused primarily by infectious agents such as Pasteurella multocida but also Staphylococcus aurus, Bordetella bronchiseptica and Pseudomonas spp to name a few. Other causes that need to be taken in consideration during the initial investigations are foreign bodies, cardiovascular diseases, and neoplastic diseases such as thymoma. In the early stages of respiratory disease, the clinical signs can be non-specific with anorexia, lethargy, weight loss, fever, discomfort and poor coat condition. With the progression of the disease specific clinical signs are nasal discharge, ocular discharge, dyspnoea, sneezing, head lift, wheezing and rattling. Open mouth breathing only develops during very severe disease as rabbits are obligate nasal breathers. A presumptive diagnosis can be made by good history and physical examination. Although some investigations can be performed when the animal is conscious, for example thoracic ultrasound, many diagnostic tests are best performed under general anaesthesia. This will reduce the amount of stress to which the sick animal is exposed and reduce the amount of time necessary to perform the procedure. Once the pet has been stabilised, gaseous anaesthesia is generally recommended. Both sevoflurane and isoflurane are considered safe, although the former is less irritant of the respiratory tract and allows a quicker induction and recovery. Depending on the initial presentation and the underlying cause, medical treatment generally includes oxygen therapy, fluid therapy, analgesia and administration of antibiotics, and mucolytic agents. Medications can be administrated orally, parenterally or via nebulisation. Nebulisation is an excellent way for administrating drugs if an animal is particularly difficult to handle. Supportive care such as additional heating and assit feeding should be provided.

**Keywords:** Pasturella, snuffles, URT, LRT, prevention,

**C6T.09 - RESPIRATORY DISEASES OF SNAKES**

**Javier Nevarez**
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**Abstract:** Respiratory disease is one of the most common presentations of snakes. There are many etiologic agents and underlying factors that contribute to respiratory diseases. An important aspect of managing this type of disease relies on having a good understanding of the anatomy and physiology of the respiratory system. The upper respiratory tract (URT) of snakes is composed of the nares, nasal passage, and choana. A vomeronasal organ is present in snakes and should be considered part of the URT due to its important function in olfaction. The lower respiratory tract (LRT) is composed of the trachea and lungs. Snakes have incomplete tracheal rings. The majority of snakes have unicameral lungs that transform into an air sac like structure caudally near the liver. The right lung is always larger than the left. The left lung is well developed in burrowing and vestigial or absent in non-burrowing snakes. Common Etiologies Bacterial infections are the most common cause of URT and LRT disease in snakes. A wide range of bacterial species has been reported to infect snakes. The second most common cause is likely viral, with paramyxoviruses (genus Ferlavirus) being the most commonly reported. Respiratory disease may also be associated with adenovirus infection and inclusion body disease. Fungal etiologies are less commonly reported. Diagnostics Radiographs lack the sensitivity of CT scans to detect subtle lung pathology. Once radiographic changes are observed in snakes, the disease is likely to be chronic and have a worse prognosis. Bacterial culture and sensitivity is the most important test in snakes. A culture sample from any discharge, cranial aspect of the choana, or tracheal wash is indicated. Cytology should also be performed. A complete blood count and chemistry panel should be obtained when possible. Coelioscopy and pulmonoscopy are additional diagnostic options that should be considered. Oral swabs and samples of tracheal wash can also be used for viral testing via PCR or culture. Treatment Therapy must be instituted until the culture results are available. Injectable cephalosporins are a good first choice. Some use amikacin for 7 days of therapy in conjunction with cephalosporins. Nebulization (enrofloxacin and/or amikacin) can also be used to ensure delivery of antimicrobial to the lungs. Amphotericin B can also be used if fungal disease is suspected. In cases of URT disease, some use ophthalmic drugs administered via the nostrils to deliver a high local dose of antimicrobial. Therapy will be required for a minimum of 3-4 weeks. However, a response to therapy should be observed within 1-2 weeks of starting treatment. It should be noted that if it is essential reptiles be hydrated and at kept at an appropriate environmental temperature and humidity to ensure the maximum efficacy of their metabolic and immune system. Outcome When properly diagnosed and treated, the outcome of these cases can be very positive. In cases that seem refractory to antimicrobial therapy, a viral or fungal etiology should be considered.

**Keywords:** snakes, respiratory disease, lungs
CT6.10 - RESPIRATORY DISEASES OF CHELONIAN

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Abstract: Respiratory disease is one of the most common presentations of chelonians. Many etiologic agents and underlying factors contribute to respiratory diseases. An important aspect of managing this type of disease relies on having a good understanding of the anatomy and physiology of the respiratory system. Chelonians have complete tracheal rings and multicamerals lungs with a single bronchus running the entire length of the lung. This leads to more difficulty in drainage of fluid and exudative material from the lungs. For this reason some even argue that pneumonia in chelonians is invariably fatal. In the author’s experience, prognosis is a factor of not only species but also the location of the disease (upper versus lower respiratory tract), etiology, chronically, severity, anatomic factors within the lung (size vs. location and proximity to the bronchus), and any other underlying disease factors. Common Etiologies Bacterial and viral infections are the most common causes of respiratory disease in chelonians. A wide range of bacterial species has been reported but Mycoplasma spp. is a common pathogen. Herpesvirus and ranavirus are the two best known viruses to affect chelonians. Others include “virus X” (Picornaviridae) and ferlavirus. Fungal etiologies are less commonly reported. Diagnostics A horizontal beam cranio-caudal view radiograph of chelonians can help differentiate between the left and right lungs. On a horizontal beam lateral view, the lungs should encompass approximately 40-60% of the coelomic cavity. Even at peak expiration, the lungs should be readily observed taking up a significant portion of the coelom. CT scans and endoscopy can provide better detail on the location and extent of respiratory disease and help design a therapeutic approach. Other diagnostics include bacterial culture and sensitivity, viral PCR, isolation, and/or serology, and cytology. A complete blood count and chemistry may also be helpful. Treatment In the author’s opinion, treatment of respiratory disease in chelonians should be aggressive to maximize the chances of success. Antimicrobial therapy to address primary or secondary bacterial infections must be started until the culture results are available. Therapy will be required for a minimum of 3-4 weeks. However, a response to therapy should be observed within 1-2 weeks of starting treatment. In cases of URT disease, some use ophthalmic drugs administered via the nostrils to deliver a high local dose of antimicrobial. In addition to injectable and oral routes, nebulization and intrapulmonary therapy have been used successfully. Nebulization is an ideal choice to help facilitate drug delivery to the lung tissue despite the presence of a single bronchus. Antiviral therapy is not widely used due to cost and poor efficacy. Placement of an esophagostomy tube should be considered in all ill chelonians to facilitate nutritional support and delivery of medications and fluids. Chelonians must be hydrated and at an appropriate temperature and humidity for maximum efficacy of therapeutics and immunity. Outcome The prognosis for these cases can vary from guarded to guarded depending on the etiology. In cases that seem refractory to antimicrobial therapy, a viral or fungal etiology should be considered.

Keywords: chelonian, respiratory disease, Mycoplasma, Herpesvirus, Ranavirus

CT6.11 - CRITICAL CARE OF REPTILES

Javier Nevarez
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Abstract: A reptile’s ectothermic nature and their ability to tolerate physiologic extremes make them ideal patients for emergency situations. For this reason their care can be planned over a longer time period. There is rarely the need to tend to reptile emergencies STAT. The author’s approach to critical patients relies on a 3-step process: 1 – signalment, presenting complaint, attitude, body condition score, weight 2 – determine if injuries are life threatening and treat accordingly; short staggered physical exams 3 – therapeutic/diagnostic plan

Therapeutics Main therapeutics consists of fluids and analgesia until diagnostics can be performed. First, the reptile must be at an appropriate temperature to facilitate drug absorption and metabolism. Nutritional support is done on stable patients. Antimicrobial therapy should be based on culture and sensitivity. Blood loss, shock, and anemia must be corrected. Burns Burns are chronic and require medical therapy. Most cases of thermal burns are often chronic. In cases of fire, damage to the respiratory tract may not be evident clinically or on radiographs until days after. Long term care of these cases requires daily wound cleaning to remove necrotic tissue, topical antimicrobial therapy, and possibly fluid therapy. Gastrointestinal Impactions/Obstruction Most gastrointestinal impactions are chronic but the animals may present in acute distress when the impaction has begun to cause problems. Foreign bodies and food are the most common causes. Medical therapy may consist of gastric lavage or enemas and analgesia. Surgery is often required, especially if the material is in the middle segments of the GI tract. These cases may carry a grave prognosis once the animal becomes depressed. Dystocia The approach requires differentiating between pre-ovulatory and post-ovulatory stasis. Dystocia may be obstructive or non-obstructive. Confirmed obstructive dystocia often require surgery. If an obstruction is not suspected or cannot be confirmed, supportive therapy followed by attempts at physical manipulation and hormonal stimulation can be attempted. Oxytocin effectiveness can be variable in reptiles but may improve when administered intravenously. It is also important that a proper substrate be provided so the reptile may actually feel comfortable laying the eggs. Prolaposed tissues can be phallus, colon/coprodeum, urodeum, or proctodeum with urinary bladder and salpinx being less common. Dehydration, parasitic infections, hypocalcemia, intestinal or cloacal obstructions, and reproductive accidents are common causes. In most cases the primary goal is to salvage the tissue and reduce the prolapse. Resection of prolapsed tissue should not be performed unless the origin of the tissue is known. If the reduction procedures are not successful, and if the tissues begin to necrotize, surgery is required.

Keywords: reptile, Emergency, critical care, trauma

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CT6 Equine  
Tuesday, May 8, 2018
07:00 – 17:00

CT6.12 - NUTRACEUTICALS IN EQUINE OSTEOARTHRITIS

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Breathitt Veterinary Center, Hopkinsville/UNITED STATES OF AMERICA, 2Vets Plus Inc, Menomonie/WI/UNITED STATES OF AMERICA

Abstract: Osteoarthritis (OA) is a chronic debilitating disease that commonly afflicts millions of horses around the world. In fact, one in five adult horses is afflicted with OA, and factors contributing to this chronic degenerative joint disease (DJD) include aging, injury, obesity, genetics, immune status and nutritional deficiency. OA is an inflammatory disease characterized by osteophyte formation, subchondral sclerosis, and bone marrow lesions, and changes in the synovial membrane, progressive cartilage degeneration, and erosions in the soft tissues of the joint. The pathophysiology of OA is very complex because it involves multiple etiologies and molecular and cellular mechanistic pathways. In OA, cartilage degeneration is due to an imbalance between synthesis and degradation of extracellular matrix components. Detection of semiquantitative and quantitative biomarkers in synovial fluid, serum, and urine aids in the diagnosis of OA at various stages. Some of these biomarkers also aid in monitoring the effectiveness of therapy. Pain and lameness are two characteristic features of OA. Presently, the symptoms of OA are managed by the use of non-steroidal anti-inflammatory drugs (NSAIDs) or surgical procedure, which is quite expensive. NSAIDs are known to cause severe side effects in the hepatic, renal, and cardiovascular systems. Presently, nutraceuticals are preferred over NSAIDs to ease the pain and discomfort of arthritis in horses. In equine OA, commonly used nutraceuticals include glucosamine and chondroitin, type II collagen, Terminalia chebula extract, curcumin, Boswellia serrata extract, Phyllanthus emblica extract, shilajit, omega-3 fatty acids, methylsulfonylmethane (MSM), hyalurronan, and others. Some of these nutraceuticals are indicated singly while others in combination to exert antioxidative, anti-inflammatory, chondroprotective, and sedative activities. Efficacy of nutraceuticals depends on selection, source, dose and the right combination of ingredients. In general, most nutraceuticals are effective and well tolerated with a wide margin of safety. However, they have not been evaluated for their pharmacological efficacy and safety in large clinical trials. Therapeutic efficacy and safety evaluation of plant-based nutraceuticals, compared to pure synthetic compounds, is complex due to a large number of factors. In addition to OA, nutraceuticals are also used to prevent or combat other animal diseases, such as dermatitis, diabetes, depression, allergies, obesity, periodontal disease; and gastrointestinal, hepatic, renal, and cardiovascular dysfunction. In conclusion, the future of nutraceuticals in animal health and diseases seems bright as they represent a new era in the prevention and treatment of so many diseases. In the near future, novel nutraceuticals will emerge and new uses of old nutraceuticals will be discovered, especially for the management of OA in horses. References: Gupta, RC, Srivastava, A. and Lal, R (2018) Nutraceuticals in Veterinary Medicine. Springer Nature, Heidelberg. In Progress. Gupta, RC [2016] Nutraceuticals: Efficacy, Safety and Toxicity. Academic Press/Elsevier, Amsterdam, 1022 pages. Gupta, R.C. [2014] Biomarkers in Toxicology. Academic Press/Elsevier, Amsterdam, 1128 pages. Gupta, R.C. [2018] Veterinary Toxicology: Basic and Clinical Principles. 3rd edn. Academic Press/Elsevier, Amsterdam, 1438 pages. Gupta, R.C. [2017] Reproductive and Developmental Toxicology. 2nd edn. Academic Press/Elsevier, Amsterdam, 1446 pages.

Keyword: Osteoarthritis, Nutraceuticals, Pain, Inflammation, Equine

CT6.13 – UPDATE ON THE TREATMENT OF SKIN TUMORS IN HORSES

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The three most common types of skin tumors in horses are equine sarcoïd, squamous cell carcinoma and melanoma.

Equine sarcoïd is associated with infection with Bovine papillomavirus (BPV). Papillomaviruses play a role in oncogenic transformation in several species and BPV infection is thought to be one of the steps for malignant transformation to equine sarcoïd. There are breed and genetic predispositions to sarcoïd and affected horses are more likely to develop additional sarcoïd compared to unaffected horses. Exposure to flies and other affected animals may also be risk factors. There are multiple sarcoïd subtypes that correlate with biologic behavior. Treatment plans should consider the subtype of tumor, size, location use of animal and financial and time constraints of the owner. Because of the high recurrence rate frequent follow up is recommended to prevent regrowth of the primary tumor. In the authors opinion treatment failures most commonly result from incomplete treatment coupled with poor follow up. Clients need to be informed of the potential for multiple treatments prior to embarking on therapy as incomplete removal can result in growth of a more aggressive variant.

Squamous cell carcinoma (SCC) is a locally invasive skin tumor that can spread to regional nodes but rarely metastasizes. Risk factors include unpigmented or poorly haired areas of the body and UV light exposure. Treatment options are similar to equine sarcoïd though complete careful excision can be curative. Education regarding preventative measures is key to minimizing the risk of SCC. Equine melanoma is classified into four subtypes and most commonly occurs in grey horses. The most common subtypes, dermal melanoma and melanomatosis are benign expansive masses. Excision is often curative though melanomatosis may be difficult to completely excise due to its size. Malignant melanomas and metastasis are rarely reported and the majority of affected horses die of unrelated causes. Treatment depends on size, type and location but excision (scalpel or laser) is often curative. When formulating a plan for treatment of an equine skin tumor the type of tumor, subtype, location, size, previous treatments, function of the horse (broodmare, performance horse) and the financial and time constraints of the owners should be considered. Sarcoïd often requires multiple treatments. Treatment of SCC should consider location, sun exposure and lymph node involvement. When treating tumors around the
eye it is critical to try to treat early to prevent loss of eyelid function or invasion into the orbital cavity. Treatment options include surgical excision, laser excision, cryotherapy, radiotherapy, topical or intralesional chemotherapy, photodynamic therapy, immunotherapy and hyperthermia. The use of electrochemotherapy (ECT) has been shown to improve overall success rate of intralesional chemotherapy. High voltage electric pulses are transmitted through the tumor bed immediately after intralesional chemotherapy. ECT results in reversible permeabilisation of the cell membrane enabling entry of the chemotherapeutic drug into the cells resulting in a much higher intra-cellular concentration. Because of the nature of the voltage anesthesia is required for ECT.

**CT6.14 – RECOGNITION AND EARLY TRIAGE OF THE HIGH-RISK FOAL**

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Early recognition and therapeutic intervention is critical to successful treatment of neonatal foal disease. Information in the foal and mare’s history, including previous pregnancies, prepartum conditions, the parturition process, physical exam and adjunctive diagnostic tests that are associated with an increased likelihood of illness.

**Historical Information about the Mare:** Prior pregnancy problems (dystocia, cervical trauma, placentalis) can indicate poor uterine health and a higher risk for birth premature or sick foals. Mares with a history of premature or dysmature foals, foals with neonatal isoerythrolysis, sepsis, or hereditary diseases (HYPP, Lethal white Syndrome) have a higher risk of having these problems recur. Acute severe illness can result in early parturition and the birth of a weak, premature foal. Chronic illness or pain often results in premature parturition; resultant foals may be small but mature as maternal stress may accelerate fetal maturation. Knowledge of vaccination history and previous colostrum quality can aid in preparation for the risk of failure of passive transfer or sepsis.

**Current Pregnancy:** The length of gestation varies with season and mare. Mare’s tend to follow their own cycle so previous gestation length is the most valuable piece of information. Colic, uterine torsion, vaginal discharge, premature lactation are all concerns during pregnancy and can indicate an early foaling. FPT or birth of a weak or sick neonate. Premature placental separation is an indicator of decreased placental support and can result in premature birth or abortion.

**Foaling Information:** Stage two begins with rupture of the chorioallantois and should progress rapidly. The foal’s forefeet and head should be visible through the thin, see-through amnion. The periparturient equine fetus does not tolerate prolonged labor and often does not survive if Stage 2 exceeds one hour consequently an abnormal presentation or lack of progress is considered a medical emergency. If placental separation occurs the foal may be born incased in the entire placenta (without rupture of the chorioallantois). This is a medical emergency and indicates complete separation and loss of blood supply to the fetus. Without rapid intervention the foal will not survive. If the foal survives delivery it should be monitored carefully as it will likely have signs associated with ischemia.

**Foal Physical exam and Behavior:** A normal foal should attempt to right itself into sternal within minutes of birth. On average a foal should stand within two hours and nurse within four. If farm associated illness/disease is present it may be valuable to ensure quick colostrum ingestion by tube feeding the foal shortly after birth to provide local immunity and activate the systemic immune system. Horses are a precocious species and foals should be capable of following their dam within hours and be very active within the first day. Foals nurse several times an hour for short periods. A distended udder may be a sign that the foal is not nursing adequately and be an early indicator of illness. In general foals have a fairly simple life consisting of nursing, playing, sleeping, urinating and defecating. Because of the large volume of milk ingested urination should be frequent and dilute. The average light breed foal (birth weight ~35 to 50 kg) should gain ~0.5 to 1 kg body weight/day.

**Farm Concerns:** Lastly information on farm problems including infectious diseases and management concerns is useful when determining if intervention should be provided.

**CT6.15 – FOAL CASE STUDIES**

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No abstract available.

**CT6.16 - CURRENT CONCEPTS ON INTEGRATIVE THERAPY OF SOFT TISSUE INJURY IN HORSES**

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**Abstract:** The focus of most approaches to treat musculoskeletal injury and especially soft tissue problems in horses has been based on medical therapy alone including all sorts of anti inflammatory drugs intra regionally or systemically and in orthobiologic therapy in the more recent decades. This is usually combined with prolonged periods of inactivity and general recipes, usually in non -individualized plans of retraining to pursue return to previous athletic level. In this presentation the aim is to open the eyes of professionals in the equestrian field as to what other strategies can be currently available and to address prevention of problems as well as their resolution using a combination of complementary actions.

**Prevention is Key!**
Avoid overtraining in same modality. The advantages of cross-training and interval training have been proven extensively over the years but the application in the equestrian world is limited by economics and facilities. Problems appear when foals are removed from natural surroundings as youngsters and the locomotor system is not optimally developed. Often times young horses are overused at early ages and progression of work load is not in accordance to each individual.
Indiscriminate use of certain types of shoes in racing and jumping is prevalent and going back to the basics or to barefoot conditions can prevent injury. Keeping up with track or arena surfaces and designs

**Early diagnosis is necessary!**

Skilled equine professionals that can detect subtle changes in the animal. Clinical signs are often subtle. Changes in temperature or slight swelling that may become unnoticed initially usually accompanied by either very low grade lameness or no lameness at all. Palpation is very important and also ultrasonographic examination even when signs are subtle

**Treating acute phases:**

Is easier than chronic disease and the horse has a good chance to recover if things are done properly. Imbalances in tissue homeostasis may be changed with physical agents. The physiological effects of heat on living tissues are well documented. Heat can induce changes in the superficial and deep tissues, at cellular and systemic levels. A modest rise in temperature (mild hyperthermia) is sufficient to accelerate and/or increase most cellular activity, and heat-induced vasodilatation can enhance local blood circulation in the nature of connective tissues. It can alter the properties of tendons, ligaments and muscle. Within these modalities we have radiofrequency, low level laser therapy combined with manual therapy and general body flexibility looking at musculotendinous junctions and training core musculature. All of these therapies may be combined with orthobiotics; PRP, IRAP; ACS

**Severe and chronic injury**

All of the above plus EPI Percutaneous intratissue electrolysis and shock wave therapy

**Prevention of reinjury**

Increases in exercise load according to each individual is number one. Accommodating training strategies: more cross-training and proprioceptive training need to be introduced into exercise regimes. Maintaining body condition both in strength and flexibility is vital. Core retraining!

**Modes of complementary actions: examples**

Acute injury: combination of specific early diagnosis, decreased work intensity, maintain core exercise and excentric exercise especially with tendon injury. Which physical agents? Cold therapy combined with radiofrequency in athermia or low intensity, or low level laser therapy, manual therapy. Which regenerative agents: PRP, allogenic or autologous stem cells intra-ligaments and muscle. Within these modalities we have radiofrequency, low level laser therapy combined with manual therapy and general body flexibility looking at musculotendinous junctions and training core musculature.

Chronic injury, specific diagnosis observe compensations in the system, decrease work intensity according to severity of impairment, core exercise upkeep. Physical agents percutaneous intra-fisular electrolysis, radiofrequency at resistive mode combined with capacitive mode or laser therapy, alternatively shock wave therapy especially for enthesisopathy problems.

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**CT6.17 – ACUPUNCTURE IN EQUINE INTERNAL MEDICINE**

Elizabeth Carr  
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No abstract available.

**SC4 Short Communications 4**

**Sunday, May 6, 2018**

17:30 – 18:30

**SC4.01 - PRELIMINARY ASSESSMENT OF STRESS, RELAXATION, AND CURIOSITY BEHAVIORS OF KENNEL-HOUSED CATS IN A NO-KILL RESCUE**

Jeannine Berger, Dvm, Dacvb, Dacaw, Cawa¹, Frances Ho²  
¹Rescue And Welfare, San Francisco spca, San Francisco/UNITED STATES OF AMERICA, ²Rescue And Welfare, San Francisco spca, San Francisco/CA/UNITED STATES OF AMERICA

**Background:** The study of animal welfare has been largely targeted to farm, laboratory, and zoo animals. Only in the last decade research was conducted on companion animals in shelter settings. The Five Freedoms model, widely accepted to define welfare standards, are violated by exposing animals to stressors associated with confinement. Not only do such stressors decrease welfare, but create undesirable in-kennel behaviors which are directly related to length of stay.

**Methods:** The San Francisco Society of the Prevention of Cruelty to Animals (SF spca), California USA was the study site. Sixteen (n=16) cats were observed in 3 different locations. The subjects were representative of cats admitted to SF spca based on breed, age, and size. Each cat was observed for 1 minute every 10 minutes for 6 hours by a trained observer.

**Results:** Stress-related behaviors were exhibited by all subjects and varied based on location in the shelter. We determined with 95% confidence that the cats in the Solarium were less stressed than those in MAC (p=0.0492) and significantly less stressed than in the LRC (p=0.04). Cats were not found to be significantly less stressed in MAC than in the LRC (p=0.1348).

We are 95% confident that cats spend more time being curious in the LRC than in MAC (p=8.562e-08) and in the LRC versus the Solarium (p= 4.806e- 05). We cannot, however, be 95% confident that cats spend a different amount of time being curious in the Solarium versus MAC (p=0.094).

We can be 95% confident that cats spend significantly different times sleeping in all 3 locations. Sleep was observed most frequently in MAC which was significantly more than the Solarium (p< 2.2e-16) and LRC (p=1.397e-13). Cats also spent more time sleeping in LRC than in the Solarium (p=0.0084).

Stress-related behaviors varied by age, with older cats (>12 years) exhibiting stress-related behaviors 51% of the time and younger cats (>2 years) 38% of the time. Compared to the other age groups, the older age group was also significantly more stressed than kittens (>2 years). When the 2- to 4-year-old age group was compared to the other groups, they were significantly
more stressed. No significant difference was found when comparing 4-year-olds to cats older than 12 years, except between 4- to 8-year-olds and the older than 12 group (p = 0.05094).

Conclusion: Overall, the results suggest that kennel-housed cats in this No-Kill rescue shelter were 3x more likely to exhibit stress-related behaviors based on location. Senior and young adult cats were the most stressed subset of cats in this rescue shelter, with young adults and senior cats housed in LRC being the most stressed. It is interesting that the adoption floor, MAC, was where the least amount of curiosity and the most sleep was observed.

It has been shown that cats that were active for longer periods of time and had novel items were more likely to be adopted (Fattuitti, J. et al., 2010).

The SF SPCA should consider implementing enrichment activities in MAC to promote curiosity and increase adoptions and house the senior and young adult cats in the Solarium prior to adoption.

Keywords: enrichment, stress, shelter, behavior, cat

SC4.02 - PRELIMINARY ASSESSMENT OF STRESS- AND RELAXATION-RELATED BEHAVIORS OF KENNEL-HOUS ED DOGS IN A NO-KILL RESCUE

Jeannine Berger, Dvm, Dacvb, Dacaw, Cawa1, Frances Ho2
1Rescue And Welfare, San Francisco SPCA, San Francisco/UNITED STATES OF AMERICA; 2Rescue And Welfare, San Francisco SPCA, San Francisco/CA/UNITED STATES OF AMERICA

Background: To date, animal welfare research has been largely focused on farm, laboratory, and zoo animals. Meaningful research on stress in companion animals in shelter settings has really only commenced in the late 1990s (Hennessy, M. B., et al., 1997). This is because the Five Freedoms Model (FAWC, 1992), widely accepted to define welfare standards, is violated when exposing animals to stressors associated with confinement (Hewson, C. J., et al., 2007). Not only do such stressors decrease welfare, but they often create undesirable in-kennel behaviors, which can make animals less desirable to potential adopters and increase length of stay (Protopopova et al., 2014). This research establishes that the ultimate goal of shelters should be to find permanent homes for animals as quickly as possible.

Methods: The SF SPCA in California, USA, was the study site. Shelter dogs (n=20) were observed in two different locations—the Mission Adoption Center (MAC) and the Leanne B. Roberts Animal Care Center (LRC). The subjects were representative of dogs admitted to the SF SPCA and included a mix of breeds, ages (6 months to 9 years), and sizes (1.95 kg to 43 kg). Each dog was observed using a scan-sampling technique (1 minute every 10 minutes) by 1 of 5 observers at a time over a period of 6 hours. Observers would pass in front of the kennel without stopping, which is similar to what the subjects experience as staff, volunteers, and potential adopters pass by throughout the day. An ethogram was developed and used to collect behavior data.

Results: Overall, 56.82% of dogs displayed stress-related behaviors.

Stress-related behaviors varied significantly by location. In LRC, the dogs exhibited stress signals in 89.51% of observations; whereas 83.67% of dogs showed these behaviors in MAC. At a 95% significance level, dogs were more stressed in LRC than in MAC (p = 0.00006468). Stress behaviors varied by age group—the Puppy group exhibited the most stress. At a 95% significance level, there were no notable differences in stress exhibited between the Puppy, 2-year-old and 4-year-old+ age group (p = 0.1273). We did find that the 2- to 4-year-old age group exhibited significantly less stress than both the Puppy and 4-year-old+ age groups (p < 2.2e-16).

Conclusion: More than half of the kennel-housed dogs in this No-Kill rescue shelter exhibited stress-related behaviors in most of the observations. Stress levels varied significantly based on location or age. Regardless of location, the most stressed subset of this population was the Puppy group. Based on these findings, welfare assessment of the entire shelter population is recommended and targeted enrichment needs to be implemented based on the most impacted age group and location.

Keywords: shelter, stress, Welfare, dog, behavior

SC4.03 - REJUVENATION OF ADIPOSE STEM CELLS USING RESVERATROL AND 5-AZACYTIDINE AS A THERAPEUTIC STRATEGY IN THE COURSE OF EQUINE METABOLIC SYNDROME

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Background: Endocrine disorders, including equine metabolic syndrome (EMS), are an increasing problem in veterinary medicine. Abnormal obesity, hyperinsulinemia, hyperleptinemia and chronic systemic inflammation contribute to EMS and, in consequence, lead to the development of laminitis. All that affects not only adipose tissue (excessive lipid accumulation, local inflammation) but also mesenchymal stem cells residing locally (adipose-derived stem cells - ASC). This fact has great consequences for regenerative medicine which uses stem cells to treat diseases. ASC have been used in clinical trials for treating diabetes mellitus symptoms in humans. Thus, it is likely that ASC will also be effective in the treatment of EMS. Since only therapy with autologous cells is possible, its effectiveness is heavily dependent on the physiological condition and properties of stem cells, which are functionally impaired in EMS horses. ASCEMs are characterized by decreased proliferation rate, mitochondria deterioration and excessive accumulation of reactive oxygen species (ROS). Taking the above into account, the main goal of the project was to perform a thorough assessment of how to recover ASC cell stemness in order to improve their therapeutic usefulness. Based on our previous studies, our main research hypothesis assumed that ASC cell azacitidine incubation in presence of antioxidants and DNA methylation inhibitors will reverse the aged phenotype of these cells.

Methods: In the first stage of the project, horses were assigned to control (n=15, healthy individuals) and experimental group (n=15, EMS horses). From all study-qualified individuals ASC were isolated from subcutaneous adipose tissue at the tail base. Next, ASC after the third passage were cultured with resveratrol and 5-azacytidine. Cells were characterized using multiple
allowed us to visualize endometrial cysts. In facilitated by the state of œstrus of the mare, the passage of the endoscope through the collar was not a problem. Examinations are realized after chemical contention, the cauterization using a hysteroscopy and a cautery. The endometrial cysts are known, but mechanical interference with uterine mechanism by which masses cause infertility is not yet quite established.

Methods: Pharmacological treatment of impaired stem cells isolated from EMS horses, by their pre-incubation with antioxidative and demethylative agents may become the first step to improve their therapeutic value and to discover an effective treatment strategy of metabolic syndrome in horses.

Results: Treatment of ASC isolated from EMS individuals with resveratrol and 5-azacytidine significantly improved their proliferation, diminished apoptosis and enhanced secretion of extracellular vesicles (MVs). Moreover, it reduced accumulation of reactive oxygen species and improved mitochondrial condition. Clinical application of rejuvenated cells resulted in reduction of body mass, decrease in insulin levels and secretion of pro-inflammatory cytokines.

Conclusion: Pharmacological treatment of impaired stem cells isolated from EMS horses, by their pre-incubation with antioxidative and demethylative agents may become the first step to improve their therapeutic value and to discover an effective treatment strategy of metabolic syndrome in horses.

Background: Uterine cysts are common in older mares (about two-thirds of those over 14 years) and are caused by neoplasia, abscessation, or cyst formation. The mechanism by which masses cause infertility is not yet quite established, but mechanical interference with uterine clearance of normal estrous secretions, sperm transport, or maternal recognition of pregnancy are potential causes. A 14-year-old Arabian bloodstock horse was admitted to the University of Béjaïa Lakhdar Veterinary Teaching Hospital for evaluation of an infertility. The mare had delivered a healthy filly 5 months previously with no apparent difficulty.

Methods: The infertility of the mare was noticed during the season of reproduction, since the last foaling. The mare Arabian bloodstock, 14-year-old, used only for the reproduction, inoculated annually against the equine flu, the rabies and the tetanus, warmed twice a year with the ivermectine in oral dough, the last grip(taking) dates 5 months. Seen the very important number of endometrial cysts and various sizes (going 7cm of diameter, which interfere probably with the mobility, the nutrition and the setting-up of the embryonic vesicle, we intended to treat them by puncturing them by cautery using a hysteroscopy and a cautery. The examinations are realized after chemical contention, the passage of the endoscope through the collar was facilitated by the state of eastrus of the mare, the introduction of a volume of CO2 inside the womb allowed us to visualize endometrial cysts.

Results: After the prehension of every cyst with the biopsy forceps, the latter were punctured and cauterised one by one. An ultrasound of control confirms the break of cysts. A protocol of induction of the hot season was begun after an uterine wash with some salty serum and the administration in utero of cephalor, of prostaglandine 10 mg / 500 kg as well as the ocytocine (10 UI of ocytocine) in IM. Another meeting of report of gestation is taken one month after the projection, highlighted by an embryonic Vesicle of 16 days.

Conclusion: In conclusion, cysts can be at the same time the cause and the consequence of a bad uterine drip. Indeed, their presence can result from vascular disorders but can also engender it. Their presence can thus make suspect a defect of blood circulation within the womb potentially responsible of subfertilité. Indeed, cysts become established preferentially at the level of the base basis of the uterine horns, zone which receives one of the branches head teacher of the uterine artery and or the embryonic vesicle comes to become established. It by referring to the literature, cyst endometrial are difficult to handle of made of second offense. In the case presented this above we managed to have a gestation by pursuing the treatment by protocol of induction of oestrus followed by natural projection.

Keyword: uterine cysts, mares, infertility

SC4.05 - WOUND HEALING DISORDER IN A HORSE, ASSOCIATED WITH ANTIMICROBIAL RESISTANT BACTERIA, RESOLVED WITH A HOMEOPATHIC REMEDY – A CASE REPORT

Petra Weiermann Tierarztprazis Weiermann, Vienna/AUSTRIA

Background: Antimicrobial resistance (AMR) arising from the use of antimicrobial agents in veterinary medicine is a concern for public health due to the detection of increasing levels of resistance in foodborne zoonotic bacteria (Törneke et al. 2015). The “one-health approach” states that the impact on public health of the use of antimicrobials in animals should be minimized as far as possible. Homeopathy may offer an appropriate alternative as homeopathic can be effective in bacterial infections. For example, in a randomized, placebo controlled, double-blind study (Camerlink et al. 2010) homeopathic remedies were used as replacement to antibiotics to treat Escherichia coli (E. coli) diarrhoea in neonatal piglets. This study showed that in the homeopathically treated group significantly fewer piglets were suffering from E. coli induced diarrhoea.

Homeopathy is a system of medicine developed by the German physician Samuel Hahnemann. It is based on the principle of “like cures like”. Substances, that when tested, cause a set of signs in healthy individuals are used to cure those symptoms (signs in animals) shown by sick individuals (Hahnemann 2003)

Methods: Case report

Results: A 4 year old trotter gelding was treated homeopathically for delayed wound healing postsurgery associated with antimicrobial resistant bacteria. The horse was presented at a clinic specialized on equine medicine in Austria for treatment of acute injury of the right foreleg (a deep lacerated wound at the radius reaching the ancones involving the cutaneous, subcutaneous, and muscular layer (M.ext.carpi rad., and
Results: Histopathology revealed a neoplastic proliferation of endotelial cells, with moderate nuclear pleomorphism and anisocariosis. The mitotic index was medium-low. The growth was invasive and reached the resected areas. The final diagnose was Lymphangiosarcoma. The animal responded well to the surgery and currently is treated with metronomic chemotherapy with toceranib and meloxicam. Two months later, at the time of writing this abstract no recidive of the tumour has been observed in the patient.

Conclusion: Conclusion This case report shows and unusual and malignant tumour poorly described in rats, with a poor prognosis. Surgery seems to be one of the best treatments in solid tumours, as in this case. But it should be associated with metronomic chemotherapy, an emerging treatment that it should be considered as a part of treatment in solid tumours in rats.


SC9.02. - PANCREATITIS AND CHOLECYSTITIS SECONDARY TO CRYPTOSPORIDIO InfectioN IN A CORN SNAKE (PANTEROPHIS GUTTATUS)

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Background: The apicomplexan genus Cryptosporidium contains about 11 species and has been identified in numerous hosts, including mammals, birds, reptiles, and fishes. In reptiles it has been reported in three genera (Elaphe, Crotalus, Sanania) and 3 species of geckos (Hemidactylus turcicus turcicus, Phelsuma madagascariensis grandis, and Eublepharis macularius). The most frequent clinical signs are enteritis and gastric hyperplasia of the Mucus-Secreting cells, which causes regurgitations, diarrhea and weight loss.

Methods: A 1-year-old, intact, captive-bom female corn snake (Panterophis guttatus) was presented with coloctic distention in the caudal part of the first third of the body, diarrhea, regurgitations and weight loss of 2-months evolution. On physical examination, the snake weighed 240g and was alert, responsive, with a bad body condition score (2/9). The patient presented a 2cm length, soft non-mobile mass located in the caudal part of the first third of the body. Blood analyses, X-ray, ultrasonography, fecal cytology and PCR of Cryptosporidium in faces were performed. Finally, an exploratory celiotomy was performed to take biopsy and microbiology samples.
Results: Diagnostic tests confirmed that the patient presented with choledopathy and necrosuppressive cholecystitis, proliferative pancreatic ductitis, pancreatitis and granulomatous-necrotizing celomitis associated with Cryptosporidium and intralesional bacteria (Enterococcus faecalis).

Conclusion: This case deals with an unusual presentation of cryptosporidiosis, in which hypothetically there was an ascending infection from the intestine - through the pancreatic duct and common bile duct- towards the pancreas and gall bladder, which finally caused a granulomatous reaction in these organs. In conclusion, in the differential diagnosis of nodules or distensions in the caudal part of the first third of the coelom should be included pancreatitis / cholecystitis secondary to cryptosporidia.

Keywords: Pancreatitis, Cholecystitis, Cryptosporidium, Corn snake, Reptiles

SC9.03 - NESTING BEHAVIOUR AND ECOLOGY OF SEMI-WILD FALSE GHARIAL IN NATURAL CAPTIVE POND
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Background: Nesting behaviour and ecology study have been done for Crocodylus porosus in Australia (Harvey and Hill, 2003; Webb at el., 1977; Webb at el., 1983). In Malaysia there is one information that was documented about the nesting behaviour for this species in captivity at National Zoo (Mathew at el., 2011). In wild Tomistoma schlegelii, the nest survey was conducted by Bezuijen et al., 1998 in Sumatra. For conservation purpose, priority is given to False Gharial because of their status in the IUCN red list is vulnerable. The objective for this study is to determine the nesting behaviour of captive False Gharial kept in earthen captive pond to model the ones in the wild. There is difficulty in finding a wild specimen, so in this project we used the False Gharial in semi-wild environment and hope the information that was recorded can serve as preliminary data that can be used as a reference for future study.

Methods: Screening observation was conducted and recorded in the ethogram. Observation using camera trap was also carried out starting from February 2013 until October 2015 (33 months). Throughout the behavioural observation of the captive False Gharial at PERHILITAN Wildlife Conservation Centre, one female laid eggs twice, 34 eggs and 32 eggs per clutch respectively which is in June 2013 and June 2014. The nest’s details were recorded using data sheets which included the nest type, substrate of the nest, dominant vegetation used to build the nest, distance between nests and permanent water body, temperature, female behaviour and general nest notes. Nest dimensions were recorded such as the height from the top of nest to the ground level, length, width and depth.

Results: Nesting season is from May to October (Nests were made and eggs laid from May to June). This species build mound nests from sand, soil, dried leaves and twigs. The composition ratio of the nest was studied. The ratio of vegetation matters to soil is 60:40. Mean distance between nests and water’s edge was 3.8 m. The temperature of the nest was taken and the mean range that was recorded is between 29 °C - 32 °C. The female that laid the eggs visited her nests irregularly but she became protective when the workers or predators come close to the nest. Nest dimensions were recorded with mean dimension: 47 cm height, 154 cm length, 127 cm width and the depth around 30 cm.

Conclusion: The nesting ecological behaviour of False Gharial at PERHILITAN Wildlife Conservation Centre is almost similar with False Gharial at Merang River, Sumatra, Indonesia. The nest dimension depend on the number of the eggs. The mean egg size was almost double than when compared, which conforms to the findings by Bezuijen et al., (1998). Nesting season of this species can be estimated from May to August based on the result from Bezuijen et al., (1998); Mathew at el., (2011) and this study.

Keywords: nesting behaviour, female crocodile, nesting ecology, Tomistoma schlegelii, egg weight

SC9.04 - MONITORING OF THE PREVALENCE OF INFECTIOUS AGENTS AND THEIR ANTIBiotic SUSCEPTIBILITY AMONG COMPANION BIRDS IN URBAN REGION
Varvara Byakhayova, Yuriy Vatnikov, Arfenya Karamyan
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Background: Infectious diseases play a sufficient role in the incidence of companion birds. According to the literature, infectious, namely bacterial diseases account for up to 6% of all diseases of companion birds. The monitoring of infectious agents and their antibiotic susceptibility among companion birds has been carried out for better analyzing this problem, to search for the best diagnostic, therapeutical and preventive measures.

Methods: An analysis was made of more than 1000 history of companion birds for 2 years. By species, birds can be divided into small, medium, large psittacine and songbirds, etc. All patients were sampled for bacteriological smear in the oral cavity and throat. Bacteriological analysis was carried out in state and private certified veterinary laboratories in Moscow. The collected data were processed by the method of Student’s variation statistics.

Results: The most common infectious agents among companion birds is Staphylococcus spp. Its occurrence is 44.6%. The second place is Enterobacteria spp. (21.9%), followed by Acinetobacter spp. (16.5%). Others common bacterial agents are Klebsiella spp and Escherichia coli (8.2% and 3.9%, respectively). The remaining species of bacteria are found in less than 2% of the total number of infections. It is important to note that in about 15% of cases this is a multiflication, which, unlike monoinfection, causes more severe pathological changes in the body and requires multifold treatment. Staphylococcus spp. is most often represented by Staphylococcus aureus, St. gallinarum, less often St. Hominis, St. aureus. Among Enterobacteria spp. most wide spread are Enterobacter cloacae, Ent. aerogenes, Ent. agglomerans. The brightest representative of the Klebsiella species is Klebsiella pneumoniae. It is important to note that almost all infectious agents in companion birds are opportunistic pathogenic bacteria. The highest antibiotic sensitivity is observed for doxycycline (32%), ciprofloxacin (25.5%), levomycin (12%), gentamicin (10.8%), enrofloxacin
(7.8%). Sensitivity to other types of antibiotics is less than 5% of all cases. In most cases there is a simultaneous sensitivity to several antibiotics, but there is always a leading one.

**Conclusion:** The main part of infectious diseases among companion birds in the city is caused by a conditionally pathogenic microflora. That indicates a significant decrease in immunity. High antibiotic sensitivity allows the use of a variety of therapeutic patterns. And thus, reduces the probability of developing antibiotic resistance.

**Keywords:** companion birds, antibiotics, infections, bacteriological agents

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**GLOBAL SEMINAR ON ANIMAL WELFARE**

**GSAW1 Global Seminar on Animal Welfare | Theme – One Welfare**
**Monday, May 7, 2018**
**13:30 – 17:45**

**GSAW1.02 – ONE WELFARE – A FRAMEWORK TO IMPROVE ANIMAL WELFARE AND HUMAN WELL BEING**
Rebecca García Pinillos
European College on Animal Welfare and Behavioural Medicine, Brackley/UNITED KINGDOM

No abstract available.

**GSAW1.03 – ANIMAL WELFARE THROUGH THE HISTORY – FROM PROTECTION AGAINST CRUELTY TO ONE WELFARE**
Teresa Villalba
Head of the Animal Welfare Sector, Spanish Ministry of Agriculture and Fisheries, Food and Environment, Madrid/SPAIN

No abstract available.

**GSAW1.04 – ANIMAL WELFARE AND THE INTERCONNECTIONS WITH ANTIMICROBIAL RESISTANCE – A CONCRETE EXAMPLE FOR ONE WELFARE**
Charlotte Berg
Department of animal environment and health, Swedish University of Agricultural Sciences (SLU), Skara/SWEDEN

**Abstract:** To protect the welfare of domestic animals, there is legislation and often also private standards on the minimum provisions of housing and management of farm animals and often also other species, such as companion and sports animal and for animals used in research. The aim of both legislation and schemes are generally to prevent unnecessary suffering, such as injury, disease or severe stress. This is of course highly relevant also to most farmers and other owners and caretakers, who genuinely want to provide a good life for their animals.

By providing housing and management suitable for the species in question, animal welfare risks can be minimized, and the possibilities for positive animal welfare will be increased. Furthermore, a well-designed housing system and suitable management practices and routines is also of relevance from a pure animal health perspective. It is well known that animals suffering from negative stress, frustration and non-fulfillment of basic requirements are more likely to have poor immune system functions, making them more susceptible to infections. Furthermore, exposure to stress-related behavioural problems may lead to physical injuries (for example tail-biting in pigs), warranting veterinary treatment, including antibiotics. In a global context, poor housing and management conditions for farm animals are still often combined with a more or less continuous supply of so-called growth promoters, which are low-dose antibiotics. The promotion of growth is then mainly a result of suppression of sub-clinical infections, which can in turn be a result of poor immune system function as a result of a barren environment, overstocking or poor air quality, for example. Antibiotics are then used as an ‘umbrella’ to protect the animals from diseases which might have been prevented by better housing and management. In summary, poor animal husbandry has led to extensive use of antibiotics in production animals.

An infection with a multi-drug or extremely drug resistant (XDR) strain of bacteria is difficult or impossible to treat. It should be borne in mind that many types of bacteria causing disease in animals will also cause similar diseases in humans. Hence, antibiotic resistance is relevant regardless of whether the cases of disease are occurring in humans or in animals. The development of resistant strains is driven by antibiotic use in both humans and animals, and the consequences are already affecting both human and animal health.

If animals are kept under poor conditions with the help of antibiotics, this is an animal welfare problem. If animals or humans cannot be treated when truly ill, this as an animal and human welfare problem. If antibiotic resistant bacteria are common among farm animals, farmers may become infected. There are cases where farmers are asked to not visit the ER at general hospitals, to prevent the spread of resistant bacteria to other patients; this is a human health and welfare problem. There are cases where school children have been told by their parent to avoid playing with children from farms, because of fear of antibiotic resistance; this is a human welfare problem. The connections are obvious, as the One Health – One Welfare approach very clearly illustrates.

**GSAW1.05 – A STUDENT PERSPECTIVE ON ONE WELFARE**
Nadine Tod
International Veterinary Students’ Association, Copenhagen/DENMARK

No abstract available.
GSAW 1.06 – APPLYING THE ONE WELFARE APPROACH – THE NEW GOOD PRACTICES FOR ANIMAL WELFARE IN AGRICULTURE DEVELOPMENT

Daniela Battaglia
Animal Production and Health Division of the Food, Food and Agriculture Organization (FAO), United Nations, Rome/ITALY
No abstract available.

ACADEMIES OF VETERINARY SCIENCES

AVS1.01 – ACADEMIES OF VETERINARY SCIENCES, SCIENTIFIC AND SOCIAL ROLE

Arturo Anadón
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Abstract: The Royal Academies arose under the protection of the Monarchy represented by Philip V (18th Century) as centers of knowledge cultivation and dissemination of knowledge. The spirit of the Enlightenment that travelled through Europe inspired the Royal Academies, originally promoted by the newly established monarchy. The Royal Academies and Academies have been and continue to be living entities oriented to the development and transmission of knowledge based on study, research, experience and professional specialization. They emphasize talent and excellence in the diverse fields of science, the arts and the humanities.

Western academies are generally public law corporations, honorific and life-long. The Academies are born with the aim of bringing together people of recognized prestige and competence in one or another area of knowledge, so that mutual communication and scientific and technical debate can serve as a stimulus to their work. The coexistence of specialists in the different fields of their competence allows for an interdisciplinary and transversal treatment that makes it possible to enrich the analysis and a weighted assessment of the topics selected and debated by the institution. The independent character and its collegiate decisions of the academies grant a singular capacity of action, it allows to approach projects and programs of action from own criteria and also shared with other public and/or private entities.

Current status and functions of veterinary science academies.

Veterinary science academies have a unique multidisciplinary composition, which implies the opportunity to integrate knowledge from its diverse sources. The sections that make up the academies, for example the Royal Academy of Veterinary Sciences of Spain, Section one: Basic Sciences; Section two: medicine and animal health; Section three: animal productions (zootechnics and environment); Section four: food, nutrition and veterinary public health, and Section fifth: history, ethics, bioethics and legislation, are a great opportunity not to be missed by us, to face the isolation that sometimes threatens us. Recourse to the advice of the Academies of Veterinary Sciences, taking advantage of the knowledge and experience of the academics that compose it, would be of great importance for the values that represent it. Veterinary sciences have been projected in multiple fields, from veterinary medicine to animal production; from public health, hygiene and food safety, its fundamental objective is the cultivation of these veterinary sciences to illustrate the aspects, areas and/or fields of knowledge and issues of greatest importance, transcendence and application according to time and circumstances, with the purpose of generating knowledge and communicating this work to society.

On the international scene, it is evident that the projection of the Royal Academies/Academies is that of Spain itself. There are notable frameworks of collaboration in the field of knowledge, existing in the Ibero-American sphere, with which we share historical, linguistic and cultural affinities. The Ibero-American Association of Academies of Veterinary Sciences (IAACIVET) was created to promote internationalization, considering the importance of veterinary and zootechnical sciences in their respective nations.

The Academies of Veterinary Sciences as consultative and dissemination bodies for knowledge and development.

These institutions can offer the scientific and technical resources accumulated by their members and multiplied and enhanced by multidisciplinary contact. Veterinary Science Academies should not compete with Universities because we have our own niche with different objectives but they can be complementary. The Conference of Veterinary Sciences Academies has been created in an attempt to join forces between all the Academies of Veterinary Sciences. The Conference of Veterinary Sciences Academies has been created in an attempt to join forces between all the Academies of Veterinary Sciences. The Conference of Veterinary Sciences Academies will be attended by the Galician Academy of Veterinary Sciences, the Academy of Veterinary Sciences of the Region of Murcia, the Academy of Veterinary Sciences of Catalonia, the Royal Academy of Veterinary Sciences of Eastern Andalusia, the Royal Sevillian Academy of Veterinary Sciences, the Academy of Veterinary Sciences of Extremadura, the Academy of Veterinary Sciences of Castilla y León, and the Royal Academy of Veterinary Sciences of Spain.

Academies have a consultative role at national and European level, and advocate for socially responsible development and use of science and technology that make important social decisions. They inform public debates on global challenges. Their commitment to support science teaching approaches that favour critical reflection and understanding of the functioning of science, scientific discoveries and technological applications should be seen in this context.

We are in a new time, characterized by the knowledge society and the rapid advance of technologies. It is therefore necessary for the Academies to assume and use the new means of communication that are becoming more and more established in our modern society. We must encourage the younger generations by awarding prizes in areas that promote a new economic model based on knowledge and innovation. To promote and preserve the Academies as active and participative institutions because they possess noble values necessary
in societies marked by economic crises and human values. We need strong corporations, focused on: knowledge and its diffusion, study, research, science and technology.

**AVS1.02 – ACTIVITIES AND OBJECTIVES OF THE NATIONAL ACADEMY OF AGRONOMY AND VETERINARY SCIENCE OF ARGENTINA**

Jorge Errecaide, Carlos Scoppa
Academia Nacional de Agronomía y Veterinaria, Buenos Aires/ARGENTINA

**Abstract:** The history of the Academies goes several centuries back before Christ in Classical Greece, and after eclipses and historical resurgence has resulted in the modern conception of scientific institutions at the highest level, of which there are examples in all countries of a certain advance in civilization.

In Argentina the first was the National Academy of Medicine founded in 1822. It is followed by the Academy of Science of Cordoba, founded in 1869, the Academy of Exact, Physical and Natural Sciences in 1874 and the National Academy of History, founded in 1893.

The National Academy of Agronomy and Veterinary Medicine was founded on October 16, 1909. The purposes of the Academia according to Article 2 of its statute are the following: a) To study and contribute to elucidate scientific and technical issues related to agronomic or veterinary sciences. b) Encourage scientific research in the disciplines mentioned in the previous paragraph establishing rewards and other incentives for authors, works or works, being able to create laboratories, experimentation fields or promote and manage foundations destined to consolidate them. c) Disseminate that scientific production to the extent that its possibilities permit. d) Stimulate scientific production, discerning awards and collaborating with the institution of courts charged with ruling on the merit of scientific production related to matters of its competence. e) Establish and maintain relationships with institutions and individuals engaged in the study or research of agronomic and veterinary sciences. f) Issue its judgment on the matters of its competence that are submitted to it, according to the terms of the agreement of the Supreme Court of Justice of the Nation of September 19, 1918. g) Respond to the questions asked, according to the terms of the agreement mentioned in the previous paragraph.

During the 1990, a research program was initiated through projects coordinated by members of the Academia, independently or in collaboration with personnel, equipment and facilities of other institutions. The program quickly acquired considerable size thanks to the efforts of many members of the Academy, limited almost solely by the availability of material resources “13. At the end of 2000, there were 35 completed projects and about a dozen and a half in execution. Also in relation to prizes, the prizes “Ing. Agr. Antonio J. Prego” “Dr. Antonio Pires” and the incorporation of the” Arbitration Chamber of the Grain Exchange “prize was achieved. With the disappearance of the Massey Ferguson Prize, the Academy replaced him with a biennial prize for Agricultural Development. In 1999, a special edition of the National Academy of Agronomy and Veterinary Prize was awarded, “Pro novum millennium cause”, awarded to Dr. Maevia Correa for her “Flora Patagónica”.

The publication “Anales de la Academia Nacional de Agronomía y Veterinaria” is an annual book that summarizes the activities of the Academy. It includes original papers, results of research projects, prices, conclusions of meetings organized by the Academy, etc. Currently, the Academy finances seven projects in the areas of insect control, rational pasture use, control of culturars, toxic plants, genetics of sugar cane, brucellosis diagnosis, use of natural compounds. The Academy instituted nineteen different prizes, that are granted every one, two or three years. An independent Jury is formed for each price depending of the selected theme, an open competition is called and the jury elects the winner.

The Academy prints books. The potential authors propose the printing of the book, the Academy evaluates it and if approved, prints and distributes the book. There are more than 90 books already printed with a frequency of four books a year since 1990.

The analysis of politics, scientific and economic reality of the country and the region is a role of our Academy. The elaboration of “opinion papers” dealing with regional problems, are faced by academic members or “ad hoc” members especially invited.

**The National Academies discuss the big issues**

For the sixth consecutive year, fifteen national academies joined efforts to analyze what is an unavoidable demand for the future of our country, as is, among other issues, the understanding of the knowledge society, the technoscience and the enormous volume of information that world markets demand to develop innovation systems and produce goods and services with higher added value. From their own perspective, each one raises the need to increase the research and development processes to make the processing and transmission of information more accessible, boosting the circulation of knowledge.

The theme chosen for this VI Interacademic Meeting is “Universities and research in the Argentina of tomorrow”, an ambitious agenda not only for the diversity of disciplines it convene, but also for the synergy and collaboration it demands among the experts involved, the teachers and the academic members. It is another example of how a joint approach can benefit a human group when it is able to take advantage of different views in pursuit of a common goal.

**The International Interacademic Conference**

During the 23rd and 24th of November 2017, the VI International Interacademic Conference took place. The National Academy of Agronomy and Veterinary Science, the National Academy of Medicine and the National Academy of Pharmacy and Biochemistry from Argentina and the National Veterinary Academy and the National Academy of Medicine from Uruguay took part. The theme addressed was antimicrobial resistance. The participants were members of the Academias and first level invited experts. There was a public attendance limited to 100 people, but the sessions were broadcast by “streaming” with a large number of participants through this medium.
AVS1.03 – RECENT EXPERIENCE IN THE ACCREDITATION OF AN EUROPEAN UNIVERSITY VETERINARY CENTRE

Recent

Pedro I. Lorenzo
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Abstract: Veterinary faculties in Europe follow a model of accreditation that marks the EAEVE (European Alliance of Veterinary Education Establishment). In the case of Spain, all its Veterinary Faculties are positively evaluated by the national agency (member of ENQA) and, also, by the EAEVE. At this moment, most of them are in the processes of renewal of such accreditation, EAEVE has the mission to harmonize veterinary education in Europe. Follow requirements of the corresponding European directives (36/2005 and SS/2013) and their transpositions to the regulations of each state. The system is based on a series of processes (visits, together with initial reports from each Faculty, which have to meet a series of standards that comply with European directives to recognize their qualification). The EAEVE develops its programs of visit taking into account the Competencies of the One Day, and the elaboration of a Self Evaluation Report (SER), in which the eleven standards whose fulfillment ensure that the future graduate in veterinary medicine meets all the knowledge are explained in detail. Skills and competencies to be a properly trained veterinarian.

The different SERs have evolved according to the regulations and requirements of veterinary education. In 2016, a new standard operating manual (SOP) was approved with the unification of stage 1 (approval) and stage 2 (accreditation of quality) in a single definition: accreditation (or commonly “full accreditation”). The Faculty of Veterinary Medicine of the Complutense University of Madrid has been the first Veterinary Teaching Establishment that has been submitted (and achieved) to this new unified evaluation system. The preparation process begins more than a year before the visit, analyzing the improvements made to date, the adjustments and improvements made in the Strategic Plans (both the Faculty and the Veterinary Clinical Hospital), the calculations of the corresponding ratios in function of the results of the last three courses and the completion of the corresponding SER and annexes. In the previous phase, teacher improvement programs were developed, improvement of necessary infrastructures, enhancement of quality assurance systems (QA), explanation of the assessment system to the academic authorities, submission of economic reports of needs, etc. One of the most important points for success was getting the involvement of all the Faculty’s staff (teachers, staff and students) in the European accreditation process, through meetings, exhibitions and creation of working groups.

The achievement of accreditation by the Faculty is an important quality factor for the center demonstrating that the training provided meets the European standards in the training of future veterinarians.

AVS1.04 – THE CO-OPERATION BETWEEN EXTERNAL AND INTERNAL QA IN HIGHER VETERINARY EDUCATION: THE ESEVT MODEL OF EAEVE

Ana Bravo
Universidad de Santiago de Compostela, Santiago/SPAIN

Abstract: Most of the Veterinary Teaching Establishments (VEE) in Europe must follow an evaluation process by a National Accreditation Body. 94 VEEs follow an International Accreditation procedure, the European System of Evaluation of Veterinary Training (ESEVT), managed by the European Association of Establishments for Veterinary Education (EAEVE) with the collaboration of the Federation of Veterinarians of Europe (FVE).

Since 1985, ESEVT has functioned as an external accreditation process of VEE in Europe. Nowadays, ESEVT is a high quality, profession-specific, efficient, economical and easy-going accreditation system, unique in Europe, fulfilling the requirements of QA and Regulations at international level (ESG 2015 and Directives 36/2005 and SS/2012 respectively). It is based on a system of Visitations together with periodic Interim Reports provided by the VEEs. To be accredited by ESEVT, the curriculum provided by a VEE must meet all the standards to be compliant with the EU Directives establishing the minimum training requirements for veterinarians referred to the only for automatic recognition of their qualification throughout the EU (Directive 2005/36/EC amended by Directive 2013/55/EU) and the Guidelines for Quality Assurance in the European Higher Education Area.

Using a competence-based model, ESEVT has developed Standard Operating Procedures (SOP) harmonised with other international accreditation bodies, which facilitates a mutual recognition of the outcomes from the accreditation process. ESEVT SOP has defined 11 standards with special reference to the Day One Competencies. ESEVT evaluates VEEs against standards to ensure that they are well managed, have adequate financing, appropriate resources (staff, facilities, animals), provide up-to-date professional curriculum, operate a fair and reliable students’ assessment as well as an ad hoc Quality Assurance System. The compliance of a VEE with all ESEVT Standards guarantees that its graduates acquire the relevant knowledge, skills and competences required for the entry-level of a veterinarian, including OIE (World Organisation for Animal Health) day-1 competencies. Standard 11 of the ESEVT is fully compliant with the ESG 2015 requirements on QA, which facilitates recognition of the accreditation outcomes by the National QA accreditation bodies. For this reason, EAEVE has asked to become full associate member of ENQA. The SOP defines specific steps of the accreditation process, its outcomes and the appeal process.

In terms of internal QA, ESEVT helps the internal QA Committee of any establishment to check in advance the ESEVT standards and sub-standards and to set measures needed achieving full compliance with the standards prior to the periodic accreditation process. ESEVT principles of external QA do not apply only for VEEs, but for the ESEVT itself. EAEVE has applied for ENQA membership and will be (has been) evaluated in November 2017. Critical analysis of ESEVT and its QA makes part of the Self-Assessment Report (SAR) prepared for ENQA review. A Committee for Internal Quality Assurance (CIQA) helps EAEVE and its ESEVT to set up QA systems that comply with European directives to recognize their qualification. The EAEVE develops its programs of visit taking into account the Competencies of the One Day, and the elaboration of a Self Evaluation Report (SER), in which the eleven standards whose fulfillment ensure that the future graduate in veterinary medicine meets all the knowledge are explained in detail. Skills and competencies to be a properly trained veterinarian.

The different SERs have evolved according to the regulations and requirements of veterinary education. In 2016, a new standard operating manual (SOP) was approved with the unification of stage 1 (approval) and stage 2 (accreditation of quality) in a single definition: accreditation (or commonly “full accreditation”). The Faculty of Veterinary Medicine of the Complutense University of Madrid has been the first Veterinary Teaching Establishment that has been submitted (and achieved) to this new unified evaluation system. The preparation process begins more than a year before the visit, analyzing the improvements made to date, the adjustments and improvements made in the Strategic Plans (both the Faculty and the Veterinary Clinical Hospital), the calculations of the corresponding ratios in function of the results of the last three courses and the completion of the corresponding SER and annexes. In the previous phase, teacher improvement programs were developed, improvement of necessary infrastructures, enhancement of quality assurance systems (QA), explanation of the assessment system to the academic authorities, submission of economic reports of needs, etc. One of the most important points for success was getting the involvement of all the Faculty’s staff (teachers, staff and students) in the European accreditation process, through meetings, exhibitions and creation of working groups.

The achievement of accreditation by the Faculty is an important quality factor for the center demonstrating that the training provided meets the European standards in the training of future veterinarians.
and adhesion by higher education institutions is supported by Agencies. This mechanism respects national legislations and coordination with the Network of National Accreditation Systems that are not profession specific.

**AVS1.05 – ACCREDITATION OF VETERINARY SCHOOLS: PRESENT AND FUTURE – THE IMPLEMENTATION OF EVALUATION PROCESS IN LATIN AMERICA**

MariA N. Cajiao  
Board Pan American Veterinary Sciences PANVET, Vice Presidente Colombian Veterinary Medicine Association, Anpla/PERU

Abstract: The establishment of the first veterinary schools in Latin America arose from the need to prevent infectious diseases, healing medicine and recovery of animal’s health of cattle in countries like Mexico (1853), Argentina (1883), Colombia (1885), Brazil, and, to take care of the horses of the armies, as in Peru (1902) and Chile (1887 and formal program in 1928). Currently, the degree awarded by universities can be Doctor in Veterinary Medicine (Médico Veterinario), or Doctor in Veterinary Medicine and Animal Science (Médico Veterinario Zootecnista). Today, there are 52 schools of veterinary medicine in Mexico, eight in Central America, 10 in the Caribbean, and 371 schools throughout South America. There is great variability in the admission requirements, cost, quality of the educational programs at many of these 441 schools, and the distribution between public and private schools varies from country to country and general agreement that improvements in quality and standardization would be beneficial.

Regarding accreditation, most of Latin American countries developed national accrediting bodies, which operate under the control of their Ministries of Education. Participation in accreditation is either mandatory or voluntary for veterinary medical schools and reviews take place over different intervals. Only in México, there is the National Council for Veterinary Education (CONEVET) as an independent veterinary professional organization recognized by the Mexican Department of Education as the first professional accrediting body in the country.

There are two recognize international accrediting bodies in Latin America. One is the Pan American Council for Veterinary Education (COPEVET) which is an academic body created by the Pan American Veterinary Medical Association. With the participation of teams of international evaluators, COPEVET has already performed accreditation site visits in several different schools especially in Mexico, but also in some countries of the region. The other accrediting body is ARCU-SUR, System of Regional Accreditation of University Careers of the States Parties of MERCOSUR and Associated States. The ARCU-SUR is a permanent regional accreditation mechanism whose objective is to provide public guarantee in the region of the academic and scientific level of resources, which is defined through regional criteria prepared by consultative committees in coordination with the Network of National Accreditation Agencies. This mechanism respects national legislations and adhesion by higher education institutions is voluntary. Some of the schools in these regions have been accredited by a team of international evaluators as part of this process.

Multiple meetings have been held with the participation of academic directors, professors, experts, accrediting bodies, etc., in which it has been established and concluded that in order to maintain high standards for basic veterinary education and to improve the quality of veterinary medical education in Latin America, it is necessary to reduce the expansive growth of the number of veterinary medical schools, while focusing on improving the quality of existing ones and prevention of operation of those schools that do not demonstrate sufficient quality. To accomplish the goal of ensuring optimal veterinary education training in the region, it is necessary to have updated legislation, which would make accreditation of all newly proposed schools mandatory. In addition, the operation of existing schools should also meet accreditation standards and national accreditation should be a compulsory exercise, fully supported by each of the National Ministries of Education. It is also recommended the establishment of legislation making it mandatory for professional certification of recent graduates and allowing regulatory oversight of licensing for all veterinarians as well as the implementation of a (board) certification examination, as performed in some other countries, that would prevent the entry of unqualified individuals into the labor market.

It is vital that professionals possess minimum standards of knowledge and the fulfillment of “day one professional competencies” as stated by the World Organization for Animal Health (OIE).

**AVS1 Continuous Veterinary Education and Veterinary Specialization**

May 8, 2018  
11:30 – 12:30

**AVS1.06 – CONTINUING VETERINARY EDUCATION IN EUROPE. THE VETERINARY SPECIALIST COLLEGES**

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Real Academia de Ciencias Veterinarias de España, Universidad de León (Spain), Leon/SPAIN

Abstract: The European Board of Veterinary Specialisation (EBVS) is composed of one representative from each of the 26 EBVS-recognized veterinary specialist colleges. Each of the Colleges has a similar Constitution and By-laws. This includes objectives, types of membership, organisation and officers and appeals against adverse decisions. The EBVS is the umbrella organization for veterinary specialties within Europe. EBVS is composed of one voting representative from each of the EBVS-recognized veterinary specialist Colleges. In addition to an Executive committee, EBVS has a number of committees. EBVS includes 26 veterinary specialist Colleges, comprising more than 35 different specialties with more than 3300 veterinarians active as a European Veterinary Specialist™. EBVS awards European Veterinary Specialist™ status based on a specialist diploma being awarded by one of the 26 recognized veterinary specialist colleges following the completion of rigorous postgraduate training, education, and examinations. In addition, European Veterinary Specialist™ are required to demonstrate every 5-years that they still satisfy the criteria for specialist status.
European Veterinary Specialists™ are ready to serve the public, its animals, and the veterinary profession by providing high quality service in several disciplines, i.e., companion animal or equine internal medicine, surgery, pharmacology and toxicology, veterinary parasitology, etc. The main role of the EBVS is to: Define guidelines for the recognition and registration of specialists in areas of veterinary medicine in Europe. Recognise and monitor veterinary specialty Colleges in Europe. Award the title of ‘European Veterinary Specialist’ in (name of specialty) for 5 years to veterinary specialists who meet their veterinary specialist College’s criteria, including re-evaluation every 5 years. Set up and maintain a register of European Veterinary Specialists. Recognise and monitor veterinary parasitology specialists in Europe. Award the title of ‘European Veterinary Specialist in Veterinary Parasitology’ for 5 years to veterinary specialists who meet their veterinary specialist College’s criteria, including re-evaluation every 5 years. Set up and maintain a register of European Veterinary Specialists in Veterinary Parasitology.

Main objectives of EVPC shall be to advance knowledge in Veterinary Parasitology in Europe and increase the competency of those practicing in this field by: Encouraging research, clinical expertise and other contributions to knowledge relating to the epidemiology, pathogenesis, pathology, diagnosis, therapy, prevention and control of parasitic diseases directly or indirectly affecting animals and promoting communication and dissemination of this knowledge. Establishing guidelines for post-graduate education and experience prerequisite to become a specialist in veterinary parasitology and examines veterinarians as specialists in veterinary parasitology.

AVS1.07 – PRESENT AND FUTURE OF EUROPEAN DIPLOMATES IN VETERINARY SCIENCE
Alejandro L. Feliu-Pascual
Department of Neurology, AUNA Especialidades Veterinarias, Paterna/SPAIN

Abstract: Veterinary Specialization in Europe is a long demanding request of the profession and general public. Similar to human medicine, the advances in veterinary medicine demands specialization to cover all aspects of the profession to a higher level than general practice. Since the 90’s, a paneuropean organization present in most countries of Europe has developed a system of training and certification of veterinary professionals in different disciplines to the highest level possible: the European Board of Veterinary Specialization EBVS. The EBVS follows similar rules to the American counterpart, the American Board of Veterinary Specialties ABVS and includes: Define guidelines for the recognition and registration of specialists in areas of veterinary medicine in Europe. Recognise and monitor veterinary specialty Colleges in Europe. Award the title of ‘European Veterinary Specialist in (name of specialty)’ for 5 years to veterinary specialists who meet their veterinary specialist College’s criteria, including re-evaluation every 5 years. Set up and maintain a register of European Veterinary Specialists. Assess the quality of these specialists by monitoring all of its Colleges. Provide information on specialisation in veterinary medicine in Europe to authorities, private organisations, veterinarians and owners of animals. Encourage and promote the enhanced utilisation and availability of specialty services to the public and the veterinary profession. Currently, the EBVS comprises 27 colleges in disciplines such as neurology, small animal internal medicine, poultry, equine internal medicine, bovine health management, surgery, ophthalmology, dermatology, public health, laboratory animal medicine, small ruminant health management, zoological medicine, pharmacology and toxicology, microbiology, etc. More than 3400 board certified European specialists from 34 countries have been certified by this organization after a stringent period of training and examination. In long-standing European colleges, diplomats must go trough a residency period lasting 3-5 years trained in the different aspects of their discipline by a European diplomat similar to the training in human medicine. During that period, the residents must be exposed to the different aspects of their specialty, publish their investigations in internationally recognised journals and present that information to a credentials committee of their college. Only when those credentials are accepted, the candidate is allowed to sit an exam set up by the college of several days duration. After passing that exam, the candidate is granted the diploma by their college and the EBVS awards the tile of “EBVS® European Veterinary Specialist in...”. Obtaining that tile allows recognition of the specialist in 17 countries of Europe, USA and Australia. In some countries where national titles exist such as France and the UK, national titles have been superseded by European titles. In other 17 countries, the title is not officially recognised but diplomats are allowed to use it. Only in Norway, the specialist European title is banned. Since 2013, the EU Directive 2013/55/EU allows the possibility of specialization in health professions including veterinary surgeons. As a consequence, and following multiple meetings with European colleges and the European directorate, the EBVS submitted to the EU an application for a Common Training Framework for Veterinary Specialization in Europe for the training of European colleges to be recognised within the EU as a level 8 of the European Qualification Framework for lifelong Learning (EQF). Currently this is under consideration by the EU. FVE, EAEVE, EBVS and UEVP also recognise the need of veterinary professionals for a middle tier qualification between the European Specialist title (considered the maximum level of expertise by all 4 associations), and the general practitioner after finishing the degree. This advanced level is primarily aimed at those professionals in full time employment willing to broaden their knowledge in a particular species (small animals, porcine, bovine, laboratory animals, etc.) but to a first opinion level. This training program must comply with the VetCEE dossier of competencies and must be approved by a VetCEE panel of experts but it is carried out by national organizations. So far, a dossier of competencies has been developed in companion animals, porcine, bovine, equine, and laboratory animals and training programs have been approved.
CERTIFIED IN BOVINE VETERINARY MEDICINE BY GHENT UNIVERSITY. CERTIFIED IN PORCINE VETERINARY MEDICINE BY GHENT UNIVERSITY IN BELGIUM. UNIVERSITAT AUTÓNOMA DE BARCELONA POST-GRADUATE PROGRAMME IN LABORATORY ANIMAL SCIENCE AND MEDICINE. POST GRADUATE TRAINING PROGRAMME IN SMALL ANIMAL VETERINARY MEDICINE OF GHENT UNIVERSITY IN BELGIUM. FACULTY OF HEALTH AND MEDICAL SCIENCES-UNIVERSITY OF COPENHAGEN AND THE DANISH VETERINARY ASSOCIATION IN DENMARK. BRITISH SMALL ANIMAL VETERINARY ASSOCIATION AND NOTTINGHAM TRENTE UNIVERSITY IN UK. FACULTY OF VETERINARY MEDICINE- UNIVERSITY OF LIFE SCIENCES OF LUBLIN IN POLAND.

In summary, EBVS-led veterinary specialization in Europe continues expanding with this highest level recognised in many European countries embracing and promoting those specialists, whereas other countries are still to officially recognise the quality of their training. A middle tier allows full time veterinary surgeons to embark in a well-structured training by species to broaden their knowledge.

POSTER PRESENTATIONS

PP1 Poster Presentations 1 Sunday, May 6, 2018 09:00 – 18:00

P.A1.02 - BIRTH SEASON, BODY CHARACTERISTICS AND SERUM LEPTIN ON PUBERTY OF BOS TAURUS AND BOS INDICUS HEIFERS IN THE TROPICS.

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Background: To study the effects of leanness of weight gained, the extent of body surface (BS) and their interaction, on age (AP), weight (WP), condition score (1 to 9) and sera Leptin concentration at first ovulation after a shown heat followed by the formation of a Corpus Luteum of normal duration (Puberty, PB).

Methods: Forty-eight heifers, 24 Brahman (ZH) and 24 Brown Suisse (SH), one half born in the Spring and the other in the Fall, were individually fed from weaning (7 m) to PB with green chopped tropical grasses and concentrate to maintain similar weight gains. To induce changes in the body composition half of the heifers received in the concentrate a β-agonist (Zilpaterol, Z) according to manufacturer recommendations. Body weights were taken at 14 d intervals, blood samples every other day and body surface every 48 d (with a previously validated device). Measures were taken by ultrasound for nb-eye area (RA) and back-fat thickness (BF) every 14 d and observations for ovulation daily once the arm and transducer could be introduced by rectum.

Progesterone was used to corroborate ovulation. Progesterone and Leptin were measured by validated RIA. The experiment was a completely randomized 2 X 2 factorial design.

Results: The differences presented were significant (P < 0.05 or 0.01). ZH were heavier and older than SH (419.2 ± 9.27 vs. 300.7 ± 8.89 kg: 664.49 ± 22.16 vs. 436.99 ± 21.89 d), Control heifers were younger than Z treated at PB (519.62 ± 21.77 vs. 581.86 ± 20.02 d), although there was an interaction age at PB X genetic group: the difference between ZH and SH born in the Spring (635.8 ± 37.9 vs. 479.7 ± 29.8 d) in the Fall born (693.2 ± 28.2 vs. 394.3 ± 34.7 d), Condition score at PB was 0.25 pts. Higher in ZH than SH, and 0.47 pts. Higher in Z treated heifers. ZH had 1.18 m² BS (31%) than SH; however, when the calculations included WP/BS the difference was only 5.6%. RA at PB was 24.9% bigger in ZH than SH and BF was thicker in ZH than SH (56.6%); Z treated heifers reached PB with 13.1% more RA and 3.8% less BF than controls. Leptin concentrations at PB, showed an interaction of genetic group X birth season: Spring heifers, ZH and SH were similar (2.89 ± 0.16 and 2.70 ± 0.13 ng/ml) and those of Fall differed (3.71 ± 0.11 and 2.79 ± 0.13 ng/ml), respectively.

Conclusion: We conclude that BS may be associated with the heat and energy loss of animals and a minimum of fat and body mass per unit of surface area is an important trait to reach PB. BS may be associated with the delayed PB observed in Zebu cattle. To the best of our knowledge, this is the first report on the relation of body surface and the onset of puberty in cattle.

Keywords: tropical cattle, puberty, heifers, body condition, seasonality

P.A1.03 - TRYPANOTOLERANCE IN MUTURU CATTLE IS LIKELY DUE TO HIGHER LEVELS OF ERYTHROCYTES SURFACE SIALIC ACID

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Background: African Animal Trypanosomosis (AAT) is a protozoan disease caused by flagellates of the genus Trypanosoma. It is considered as the most important disease of ruminant, hindering the expansion of livestock and agricultural industry in Africa. Trypanosomiasis is currently spreading and invading areas previously known to be free of trypanosomes. This is a serious threat to livestock production. This study is to determine and compare the occurrence of trypanosomes in Muturu and Bunaji cattle in Gboko and Makurdi Local Governments of Benue State, Nigeria and to compare the erythrocyte surface and free serum sialic acid concentrations between the two breeds of cattle.

Methods: A total of two hundred (200) cattle comprising of 100 Muturu and 100 Bunaji breeds of cattle were sampled. The blood samples were screened for Trypanosoma species using Polymerase Chain Reaction (PCR), while the erythrocyte surface (ghost) sialic acid and free serum sialic acid concentrations were determined using standard procedures.
Results: The results had 5% of the Muturu and 23% of the Bunaji breeds of cattle to be positive for trypanosomae. Three species of trypanosomatids were detected namely, Trypanosoma congolense, T. brucei, T. evansi and T. vivax. There was no statistical difference between the occurrence of trypanosomae in Muturu and Bunaji breeds of cattle \( p=0.216, \chi^2=1.561 \). Erythrocyte surface (ghost) sialic acid were significantly higher in Muturu than Bunaji cattle \( p=0.0048, t=2.870 \) while free serum sialic acid were significantly lower in Muturu than Bunaji breeds \( p=0.0004, t=3.614 \). This is the first report of the free serum sialic acid and erythrocyte surface sialic acid of the Muturu breed of cattle and the presence of T. evansi in cattle from the study location. The Muturu cattle erythrocytes have higher concentration of sialic acid than the Bunaji breed.

Conclusion: The free surface sialic acid in the Muturu cattle probably explains why this breed requires higher parasitaemia to produce a significant reduction in the erythrocyte surface sialic acid necessary for erythropagocytosis, and this could be responsible for the relative trypanotolerance of the Muturu breed.

Keywords: Trypanotolerance, Muturu cattle, Erythrocyte sialic acids, Trypanosoma

P.A.T1.04 - INBREEDING EFFECT ON WEIGHT BIRTH AND FLEECE WEIGHT IN AN ALPACA POPULATION

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Background: Currently, available information about alpaca inbreeding to analyze genetic progress, depression or variability is limited. The aim of this study was to determine the inbreeding coefficient and the inbreeding effect over the birth weight and fleece weight in an alpaca population.

Methods: 12 493 animals’ data who were born in Puno between 1999 and 2012 from Mallkini farm of Micell Sciences, Universidad Cientifica del Sur, Lima/PERU, 12 493 animals’ data who were born in Puno between 1999 and 2012 from Mallkini farm of MICHELL Sciences, Universidad Cientifica del Sur, Lima/PERU, 12 493 animals’ data who were born in Puno between 1999 and 2012 from Mallkini farm of MICHELL Sciences, Universidad Cientifica del Sur, Lima/PERU, 12 493 animals’ data who were born in Puno between 1999 and 2012 from Mallkini farm of MICHELL Sciences, Universidad Cientifica del Sur, Lima/PERU,

Results: The average population inbreeding coefficient was 0.1654%. Only one percent of the alpaca population (1.0970%) presented an inbreeding coefficient more than 0 with a minimum value of 1.56% and a maximum one of 25%. The one percent inbreeding effect was \( -0.00418 \) kg and -0.01107 kg for birth weight \( p=0.530 \) and fleece weight \( p=0.002 \), respectively.

Conclusion: In conclusion, inbreeding increase is lower than 1%. Nevertheless, the inbreeding depression on birth weight is not statistically significant as opposite to fleece weight. In order to obtain a better inbreeding coefficient estimation and its effect on productive parameters in alpacas more genealogical information is needed.

Keywords: alpaca, inbreeding, birth weight, fleece weight

P.A.T1.16 – RELIABILITY ASSESSMENT OF A NOVEL FELINE HEMATURIA HOME SCREENING TEST

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1Pathology, Microbiology, University of Montreal, Faculty of Veterinary Medicine, Saint-Hyacinthe, QC/Canada, 2Biomedicine, University of Montreal, Faculty of Veterinary Medicine, Saint-Hyacinthe, QC/Canada

Background
Despite the health benefits of its early detection and diagnosis, detecting hematuria is a challenge for cat owners. A novel hematuria-screening test for use at home on the litter, consisting in small white granules loaded with reagents that convert into a pigment using hemoglobin as a catalyst, is in its last stages of development. The product’s sensitivity towards microhematuria and robustness to urine composition have been disclosed elsewhere (Khenifar E, et al., 2016, ACVP Annual meeting, New Orleans, LA, U.S.A.). We hypothesized that the metric characteristics of the product are adequate for the clinical monitoring of feline hematuria. The goal of this study is to assess the reliability of the screening test at the clinics and at home, with cats afflicted by a variety of feline health problems.

Methods
We conducted a multicentric adaptive clinical trial, comprising a planned interim statistical analysis to assess and/or revise the experimental plan, using two study arms. In the first arm, 6 veterinary clinics of Quebec tested the product on all arriving sick cats requiring a standardized urinalysis (i.e. centrifugation, dipstick on supernatant, x400 microscopic analysis on the sediment). In parallel to the listed tests, 2 drops of urine were poured on 4 granules whose color intensity was ranked on an ordinal scale (0, negative; to 3+, dark blue). In the second study arm, owners of cats at risk of developing hematuria added the screening test to the cat’s litter for 1 month and brought the cat back to the clinic for urinalysis when the test gave a positive result. For both study arms, hematuria was considered present with a standardized urinalysis (i.e. centrifugation, dipstick on supernatant, x400 microscopic analysis on the sediment). In parallel to the listed tests, 2 drops of urine were poured on 4 granules whose color intensity was ranked on an ordinal scale (0, negative; to 3+, dark blue). In the second study arm, owners of cats at risk of developing hematuria added the screening test to the cat’s litter for 1 month and brought the cat back to the clinic for urinalysis when the test gave a positive result. For both study arms, hematuria was considered present with a standardized urinalysis (i.e. centrifugation, dipstick on supernatant, x400 microscopic analysis on the sediment).

Results
The interim statistical analysis performed on the first 34 cats (4 clinics) revealed that the hematuria threshold was too conservative and could be decreased to 5 RBC/HFF. Also, the 2nd study arm was underrepresented, therefore a cat shelter was recruited to increase the number of cats. To detect at least one false negative and false positive and perform the final statistical analysis, 80 cases were required.

The final statistical analysis revealed that the number of RBC/HFF, the blood estimation from the dipstick, the proteinuria and the pH significantly increased the cumulative odds of a positive screening result \( p<0.05 \). However, the quadratic effects of proteinuria and of pH slightly decreased the color intensity of a positive result.
(p<0.05). For a positive result of 1+ or higher, Se=91.5%, Sp=90.9%, PPV=93.5% and NPV=88.2%.

**Conclusion**
The chromogenic screening product has the required metric characteristics for a reliable use in clinical monitoring of feline hematuria. Further studies are under progress to confirm the test reliability on a wider sample of patients and document the prevalence of hematuria among the North American feline population.

**P.CT2.01 - EVALUATION OF FOUR ANTENATAL GLUCOCORTICOIDs PROTOCOLS IN BLOOD HEMOGASOMETRY OF PREMATURE KIDS**

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**Background:** A rapid period of asphyxia occurs during normal labor, even though the presence of transitory hypercapnia and acidemia can be verified in the newborn. After delivery, hypoxia persists, mainly due to inadequate gas exchanges as a consequence of lung or respiratory center immaturity. Delay in the onset of respiration and metabolic acidosis are associated with neonatal morbidity and mortality. The aim of this study was to evaluate the corticotherapy treatment impact on the hemogasometry values of premature kids in the first 48 hours of life.

**Methods:** We evaluated 38 preterm kids born by elective cesarean section (141 days) divided into four different groups. Group I (n=10) whose mothers received dexamethasone (20 mg/IM) 48 hours before surgery (139 days); Group II (n=9) whose mothers received 2 mg/IM dexamethasone from 133 until 136 days of gestation, plus 4 mg/IM at 137 and 138 days of gestation and an additional dose (20 mg/IM) at 139 days of gestation; Group III (n=9) whose mothers received four doses of dexamethasone (16 mg/IM) every 12 hours from 139-141 days of gestation; and Group IV (n=9) whose mothers received 4 mg/IM at day 137 day, 8mg/IM at day 138, 16 mg/IM at day 139 and 20 mg/kg at 140 days of gestation. Venous blood samples were collected immediately after birth (M0), one (M1), 12 (M12), 24 (M24) and 48 hours (M48) for blood gas analysis. The pH, pCO2 and HCO3− concentrations were measured on the i-STAT portable clinical analyzer with disposable Eg7+ cartridges. An ANOVA was performed to determine whether there were any significant differences between groups, and over time and mean values were compared by use of a Tukey test. A value of P < 0.05 was considered significant for all tests.

**Results:** In the evaluation of pH, no differences were observed between the groups. The pH values at birth and at 60 minutes after birth were below the reference values, featuring an acidosis, but the highest values were measured at 12 hours of life. No significant difference was detected among groups in pCO2 concentrations; however, at baseline (M0) and after 60 minutes after birth, pCO2 concentration were significantly higher in comparison with the other moments of evaluation. Concentrations of HCO3 were within the normal range for adult goats. From 16 to 60 minutes of life, mortality rates were 3/10 (30%) for kids from Protocol 1, and 3/9 (33%) for newborn goats in Protocol 3. Of these, five died from possible respiratory failure (neonatal asphyxia) and one from trauma (bruising and fracture of ribs, with perforation of lungs) caused by its mother.

**Conclusion:** We concluded that, at birth, most of the kids showed transient respiratory acidosis, which was corrected after 1 hour of life; also, the proposed protocols had a beneficial effect on accelerating fetal lung maturation.

**Keywords:** lung function, goats, newborn, respiratory acidosis, dexamethasone

**P.CT2.02 - EVALUATION OF ANDIROBA OIL IN POST-ADHESIOLIZATION PROCESS IN GENITOURINARY SYSTEM IN SHEEP TREATMENT**

Adriana Elizabeth Cordeiro Barbosa1, Gabriela Melo Alves Dos Santos1, Luisa Pucci Bueno Borges1, Hanna Lyce Magno De Morais1, Barbara Da Conceição Guillerme1, Luciana Da Silva Siqueira1, Daniella Kaisa De Oliveira Bezerra1, Carmen Silvia Pantoja Pereira1, Renato Abrantes De Oliveira1, Rodrigo Dos Santos Albuquerque1, Renata Sitta Gomes Mariano1, Wilter Ricardo R. Vicente1, Marco Augusto Machado Silva1, Felipe Farias Pereira Da Câmara Barros1, Pedro Paulo Maia Teixeira1
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**Background:** Post-operative intra-abdominal adhesions represent an intercurcence in patients undergoing abdominal surgeries. The andiroba oil (Carapa guianensis) is a phytotherapeutic medication with proved functions, for example the anti-inflammatory action.

**Methods:** Eight healthy adult pluriparous Santa Inês ewes were selected them randomly divided into two experimental groups. The control group (CG, n=4) had no anti-adhesion treatment and the Andiroba group (GA, n=4) were treated with andiroba oil. All animals were submitted to a 36 hours food and water fasting, pre medicated with acepromazine 0,005mg/kg, sedated with propofol 6 mg/kg and maintained with inhalation anesthesia (isoflurane). Through laparotomy using monopolar diatmessy method, 3 adhesion points were induced in the right uterine horn and one point in the right ovary, subsequently six drops of andiroba oil were applied at each cauterization point. After 15 days, all animals were created to manipulate and perform adhesiolyis with atraumatic manipulation forceps and mixter forceps respectively, then classified the presence of adhesions.
Background: Marbofloxacin is a third-generation fluoroquinolone for used and developed only in veterinary medicine. It has a broad-spectrum activity against Mycoplasma, Gram-positive and Gram-negative bacteria.

Methods: Twenty-four healthy Akkaraman sheep were randomly selected to four dose groups including six animals in each group. Marbofloxacin was injected to each sheep at dose levels of 2, 4, 6 and 10 mg/kg in the semitendinosus muscle. Blood samples were collected using a catheter placed in the right jugular vein at 0 [pretreatment], 5, 10, 15, 20, 25, 30, and 45 min and 1, 1.5, 2, 3, 4, 5, 6, 7, 8, 10, 12, 18, 24, 36 and 48 h post-dosing. Plasma MB concentrations were determined using a HPLC method.

Results: The pharmacokinetic parameters of marbofloxacin after intramuscular administration at doses of 2, 4, 6 and 10 mg/kg were calculated using non-compartmental model. Marbofloxacin at dose level of 10 mg/kg was demonstrated a longer $t_{1/2}$ (16.82 h) and higher AUC$_{0-\infty}$ (16.21 h*µg/mL) and MRT$_{0-\infty}$ (14.35 h) values compared to other dose groups.

Conclusion: The current study demonstrate that marbofloxacin at a doses of 2, 4, 6 and 10 mg/kg bw t is appropriate for the treatment of systemic infections caused by susceptible pathogens with MIC values ≤0.1 µg/mL in sheep. However, additional studies may also be necessary to confirm the penetration of marbofloxacin in diseased tissues.

Acknowledgments: This study was supported by Dicle University of Turkey (DUBAP grant no. VETERINER.17.020).

Keywords: marbofloxacin, pharmacokinetic, Sheep, different doses.

P.CT2.05 - INFLUENCE OF RESPIRATORY DISEASES STATE AND ALBENDAZOLE ON MARBOFLOXACIN PHARMACOKINETICS IN HEALTHY AND NATURALLY INFECTED LAMBS

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Background: Marbofloxacin, a third-generation fluoroquinolone, is used for the treatment of various respiratory diseases because they are distribution throughout the organism and readily daily administration. To assess the effects of single oral dose of albendazole (ALB) on single-dose pharmacokinetics of marbofloxacin (MB) in clinically healthy and naturally infected lambs.

Methods: Six healthy lambs and twelve clinical lamb patients: 3-6 months old. In the marbofloxacin group (MB group), 6 healthy lamb received MB. In the albendazole
group (ALB group) after least 2 weeks washout period, the same animals received MB on 1 hour after ALB. In the diseases marbofloxacin group (DMB), 6 lambs indicating signs of respiratory system diseases received MB (3 mg/kg, IM). In the diseases albendazole group (DALB), 6 lambs indicating signs of respiratory system diseases received albendazole (5 mg/kg, IM) on 1 hour after ALB. The MB and ALB was administered single dose of 3 mg/kg intramuscular and 7.5 mg/kg oral, respectively, in the all groups. Plasma concentration of MB was measured with HPLC-UV and pharmacokinetic parameters were analyzed by non-compartmental model.

Results: The obtained results revealed that albendazole administration did not affect a significant difference in marbofloxacin pharmacokinetics between MB and ALMB groups. On the other hand, it has been determined that the diseases state have effect on the pharmacokinetic profile of MB in comparison with normal healthy lambs.

Conclusion: Consequently, the interaction between albendazole and marbofloxacin in lambs might not be of clinical significance. However, additional studies may also be necessary to confirm the interaction between albendazole and marbofloxacin in lambs.

Keywords: marbofloxacin, pharmacokinetic, Lamb, albendazole

P.CT2.08 - NUTRIENT COMPOSITION OF MILK FROM DIFFERENT BUFFALO BREEDS IN BUFFALO BREEDING AND RESEARCH CENTER SABAH, MALAYSIA

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Background: The increasing consumption of dairy products among Malaysian showed steady growth for a past few years. Indeed, this trend has brought potential of buffalo milk to be an alternative dairy resource to fulfill the demand. However, the nutritional value of buffalo milk has not been fully determined and characterized. Indeed, the information about nutritional composition of buffalo milk from different breeds and crossbreeds is still limited in Malaysia. Therefore, this study was done with the aim to determine the nutrient composition of buffalo milk from Swamp buffaloes and Murrah crossbred buffaloes at Buffalo Breeding and Research Center, Sabah, Malaysia.

Methods: The buffaloes were kept in extensive system and allowed to graze in the paddock. Milk samples were collected from a total of 30 buffaloes, which consist of 15 Murrah crossbreed and 15 Swamp buffaloes. After collection, the milk samples were preserved with 40% formalin, chilled at 40°C prior further analysis. The nutritional composition of milk such as fat, protein, casein, lactose, total solid and fatty acids were determined.

Results: showed that milk from Murrah crossbred buffaloes contain higher fat and total solid casein, as compared to Swamp buffaloes (fat: 2.21% vs 1.55% and total solid: 14.11% vs 14.01%). Meanwhile, protein, casein, and lactose were higher in milk from Swamp buffaloes as compared to Murrah crossbred buffaloes (Protein: 6.25% vs 5.62%, Casein: 5.52% vs 4.70%, and Lactose: 4.65% vs 4.48%). As for the fatty acids composition, milk samples from Murrah crossbred was found high in monounsaturated fatty acid (MUFA; C18:1) and saturated fatty acids (SFAs; C16:0 and C18:0) as compared to Swamp Buffaloes (MUFA: C14:0=22.65% vs 21.88% and SFAs; C16:0=28.52% vs 27.07%, C18:0=20.4% vs 16.32%). Meanwhile, polyunsaturated fatty acids (PUFAs; C18:2 and C18:3) levels were lower in Murrah crossbred as compared to Swamp buffaloes (PUFAs; C18:2=1.47% vs 2.47%; C18:3=0.83% vs 1.79%).

Conclusion: There was a difference on milk composition between buffalo breed (Murrah cross breed vs Swamp) which could be due to various factors such as feed intake, age of animal, genetic and environment. In comparison of these nutrients composition particularly on the fatty acids content of buffalo milk between breed, it can be concluded that the buffalo milk from Murrah crossbred has a great potential to be utilized as nutritional soft drink and/or as better base for dairy products.

Keywords: buffalo, Murrah crossbreed, Swamp, fatty acids, milk composition

P.CT2.09 - THE RISE AND DECLINE OF THE MULESING PROCEDURE IN WOOL SHEEP

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Background: The Mules “operation” was developed in Australia in the 1930s to reduce the susceptibility of especially Merino sheep to blowfly strike (myiasis) in the fleece around the perineum, and was so successful that it became the mainstay for control for over 50 years. However, increasing concerns for sheep welfare has latterly led to an escalating aversion to its use and it has been phased out in many countries. This presentation records the events and factors that led to the rise and fall of the procedure.

Methods: All available literature and sources that could shed light on the development, increased use, welfare concerns, alternatives, and eventual demise of Mulesing were consulted and analysed for inclusion in this overview, which thus comprises a new, comprehensive analysis of the history of Mulesing.

Results: The procedure is briefly described and pertinent features are highlighted. Skin removal is done without anaesthetic and has after-effects for many days. The original reasons for Mulesing lay mainly in the disastrous decision to breed Merino sheep with heavily pleated skins (the Vermont sheep) in the false belief that this was essential for increased wool yield, but this breeding direction resulted in sheep that were more susceptible to fly strike especially around the breech. Mulesing became the mainstay for blowfly protection because it was so successful and there were no highly effective remedies at the time. The procedure was modified five times
successively over the years from a simple removal of lateral skin flaps to increasingly severe stages of modified, radical and V-mulesing, including removal of skin from above the tail to half way down the upper leg. Attacks on its continued use by welfare organisations began in the 1980s and climaxed after the turn of the century, particularly in Australia. Attempts at amelioration included training and certifying operators, using clips, specifying age limits, and using pain killers (analgesia), none of which have been fully satisfactory. Alternative methods of blowfly control include long-acting, effective insecticides, changing the tail-docking length, changing the shearing time, crutching, reducing diarrhoea (anthelmintics and selection) and breeding blowfly-resistant sheep. From early times scientists suspected and then proved much later that genetic faults including excessive skin pleating were causing increased susceptibility to blowfly strike and that breeding the right type of sheep could obviate the need for Mulesing. Factors leading to redundancy were the increasing pressure of animal welfare organisations, public and wool buyers, but most of all the clear demonstration that blowfly resistant sheep could be bred. The current decline or elimination of Mulesing is ongoing and worldwide; it is no longer used in wool sheep in Uruguay, New Zealand, Lesotho and South Africa, and has been banned in many countries. In Australia its use is declining progressively.

Conclusion: The continued use of the Mules procedure can no longer be justified or accepted since there are other humane alternatives available which render it redundant. In many countries now its use is either illegal or strongly discouraged.

Keyword: wool sheep Mules welfare

P.CT2.12 - ENHANCING THE REPRODUCTIVE PERFORMANCES OF BOER X JAMNAPARI CROSS BREED DOES THROUGH FLUSHING PROGRAMME

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Background: Flushing refers to the practice of increasing level of feed offered to breeding does mostly in the form of energy and protein content prior to breeding programme. Flushing is generally recognized as a regulator of reproduction and has been reported to positively affect the body condition, fertility and ovulation rate of dams. Thus, the objective of this study was to evaluate the effect of short-term (21 days) flushing with high protein and energy diet on the reproductive performance of Boer x Jamnapari cross breed does prior to breeding programme. Body condition score was evaluated after 21 days of flushing. Parameters used to evaluate reproductive performance were pregnancy rate, kidding rate and birth weight.

Methods: This study was conducted at a smallholder goat farm located at Selangor, Malaysia. Thirty healthy female goats from replacement herd at the age of 9 to 10 months old with mean weight at 28±0.7 kg were used in this study. Does were randomly divided into 2 groups, control (n=15) and treatment (n=15) group and kept under intensive farming system. Distribution of goats that having ideal body condition score (3 out of 5) was similar in both groups at rate of 40% prior to feeding trial. Goats in control group were fed with maintenance diet (Napier grass and pressed soy waste at the ratio of 60:40 and supplemented with 300g commercial goat concentrate) for 21 days. Mineral block and drinking water were supplied all times. After 21 days of feeding trial, the breeding programme was started in which the does in both groups were introduced to a sexually active Boer buck. Pregnancy and kidding rate were calculated at the end of the study. Birth weight also was recorded.

Results: After 21 days of feeding trial, number of does with ideal body condition score was greater in treatment group from 40% to 86.67% as compared with control group which only 66.67%. After 45 days of breeding, pregnancy diagnosis via trans-abdominal ultrasound was performed. Results for pregnancy rate shown significant different between control and treatment group where the rate were 33.3% and 87.6%, respectively. Kidding rate was calculated after all the pregnant does gave birth. Kidding rate in treatment group was greater than control group at rate of 86.67% and 33.33%, respectively. The average birth weight of the kids from treatment group (3.02±0.15 kg) was greater as compared to control group (2.54±0.27 kg).

Conclusion: The results of the study concluded that flushing programme before breeding can improve the body condition score of the does, thus, enhancing the pregnancy rate, kidding rate and birth weight which can contribute to the improvement of the farm productivity.

Keywords: KIDDING RATE, birth weight, DOES, FLUSHING, PREGNANCY RATE

P.CT2.15 - MAMMARY CUTANEOUS SQUAMOUS CELL CARCINOMA IN A HOLSTEIN COW: CLINICAL AND HISTOPATHOLOGICAL EVALUATION

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Background: Squamous cell carcinoma in the udder of cattle, as compared with other species, is rare. Low incidence of mammary carcinomas in cattle is related to factors such as successive pregnancies, low exposure to estrogen during calving process, early culling, and high lactation rat. Hereditary factors, environmental factors (e.g., latitude, altitude, exposure to sunlight), lack of eyelid pigmentation, age and dietary habits are the major epidemiologic risk factors for the development of the tumor.

Methods: A 10-year old Holstein cow was presented with history of an irregularly shaped and cauliflower-like, ulcerated mass that affected the udder, which gradually increased in size. The cow grazes in pastures with a rotational grazing system, with fields over the 3000 msl with sunlight the entire year. The farm is located in the Andes mountain, in the Nariño department in Colombia, with an average temperature 12o C. The site of tumor growth was on the dorsal surface of the udder rear quarters, over the suspensory medium ligament and the lateral ligaments. The enlarging tissue appeared 6 months earlier to presentation as a small neoplastic...
tissue. The peripheral lymph nodes were normal. There was evidence of an ocular squamous cell carcinoma (nictitating membrane) 5 years ago, which was removed by surgery. The animal was restrained in standing position. A caudal epidural anesthesia was performed using Xylazine diluted to a solution of 2% lidocaine, the pudendal nerve was block and infiltration with lidocaine was performed by making multiple subcutaneous injections around the tumor. The mass was excised making a dissection of all abnormal tissue within a wide surgical margin of 2 to 3 mm around the periphery of the tumor.

Results: Histopathological examination revealed a well-differentiated squamous cell carcinoma displaying central pearls of keratin and a dense fibrous stroma. The tumor cell was large and had an abundant eosinophilic cytoplasm with slightly enlarged hyperchromatic nuclei. Tumor cells showed hyperchromatism and mitotic figure in some areas.

Conclusions: The anamnesis and clinical history data, as well as the manifestations obtained in the physical examination, the anatomopathological characteristics of the lesions and the histopathological results confirmed the diagnosis of a mammary cutaneous squamous cell carcinoma (SCC) in a Holstein cow. After 15 days of surgical intervention, the sutures were removed. The wound healed and the animal enter the reproduction program again

Keywords: udder, surgery, Squamous cell carcinomas, Bovine

P.H17.01 - INVESTIGATE THE COMPOSTING CONDITIONS OF LIQUID BY-PRODUCT OBTAINED FROM DEGRADATION OF PIG CARCASS

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Background: Globally, concern about emerging infectious diseases of livestock is growing. For the disposal of the animal carcass, it is necessary to recycle the carcass into an agriculturally usable product. The objective of this study was to investigate the composting conditions of liquid by-product obtained from degradation of pig carcass for agriculture recycling.

Methods: Optimum conditions of liquid fertilizer were investigated using different microorganisms, pHs, and volumes of microorganisms (Lactobacillus rhamnosus + Pichia deserticola). Based on the results from the optimum conditions, compost maturity and quality of liquid fertilizer were evaluated for 112 days.

Results: The compost maturity of liquid fertilizer were higher in the order of LP (Lactobacillus rhamnosus + Pichia deserticola) > BC (Bacillus cereus) > BS (Bacillus subtilis). The optimum condition under different volumes of LP was injection of 0.5 mL/100 mL. The compost maturity under different pHs were higher in the order of pH 7 > 5 ≥ 9 ≥ 11. The liquid by-product at 56 days after composting was completely decomposed. The concentrations of T-N, TP and K2O in liquid fertilizer at 56days were 0.94, 0.17 and 3.78%, respectively, and the sum of those concentrations was 4.89%.

Conclusion: Liquid fertilizer of by-product using pig carcass was decomposed with optimum conditions (LP, pH 7, injection of 0.5 mL/100 mL) in 56 days after composting, and was suitable for official standard of commercial fertilizer.

PCT1.01 - QUANTITATIVE ACOUSTIC RADIATION FORCE IMPULSE (ARFI) OF THE UTERINE STRUCTURE IN POSTPARTUM BITCHES - PRELIMINARY RESULTS

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Background: Elastography has been included in veterinary obstetrics, presenting promising results in the evaluation of maternal fetal viability. Was to evaluate the physiological uterine involution of the newly-delivered females by assessing the rigidity of the uterine structure in postpartum bitches using ARFI [Acoustic Radiation Force Impulse] elastography, in order to report reference values for shear wave velocity (SWV) in physiological condition.

Methods: Three healthy, brachycephalic adult bitches weighing 10-15 kg were submitted to elastography, using the ultrasound equipment ACUSON S2000/SIEMENS and 9.0 MHz transducer. The evaluation of uterine involution occurred daily up to the 15th day postpartum. The mean SWV of the uterine tissue was determined after five samplings of the ARFI technique in the myo and endometrial portion. The mean uterine SWV was compared between the postpartum days by the ANOVA test and the Tukey post-test, and this variable was correlated with the postpartum days by the Pearson’s test (P <0.05).

Results: The SWV in the endometrial and myometrial regions were similar (P > 0.05). Mean uterine SWV was higher (p = 0.049) from the 6th day postpartum (CI = 1.60 ± 0.22 m/s) when compared to the first day postpartum assessment (CI = 1.07 ± 0.46 m/s) and this variable correlates positively with postpartum days (r = 0.531, p = 0.039).

Conclusion: Elastography is an easy and applicable technique as a method of non-invasive assessment of postpartum uterine tissue and it is expected that this technique can be used in the differentiation between physiological and pathological processes of the structures and periods evaluated.

Keywords: postpartum, bitches, Quantitative, Elastography, uterine involution
Background: Staphylococcus aureus is the causative agent of clinical or subclinical mastitis in dairy cows and it is also cause pathogenic diseases in human. Several hospitals reported the increase of methicillin resistant Staphylococcus aureus (MRSA) frequency, because this strain was resistant to several antibiotics. The present study determined antimicrobial resistance patterns and gene encoding for methicillin resistance (mecA) of 46 Staphylococcus aureus isolated from dairy cows and human.

Methods: Staphylococcus aureus identification were performed based on cultural and biochemical tests and also an amplification of a specific section from 23S rRNA gene. All isolates were investigated for the genes encoding methicillin/oxacillin resistant (mecA) by polymerase chain reaction (PCR).

Results: Staphylococcus aureus originating from human were more resistant than bovine origin. Eight S. aureus (17.39%) were resistant to single antibiotic and 8 isolates (17.39%) showed resistance to 2 antimicrobial agents. Multidrugs resistances were found in 26 (56.52%) of S. aureus isolates. Resistance to ampicillin was the most common finding (88.46%, 50%), followed by gentamicin (76.92%, 35%), tetracyclin (65.38%, 30%), oxacillin (46.15%, 35%), and erythromycin (42.31%, 25%) for human and bovine, respectively. By PCR amplification could be observed in 5 (25%) methicillin resistant (mecA) genes for bovine isolates and 7 (26.92%) human isolates. These isolates were identified as methicillin resistant S. aureus (MRSA).

Conclusion: The resistance of S. aureus to methicillin/oxacillin and the other antibiotics in the present study might help to understand the distribution of MRSA among human and bovine isolates and might help to control S. aureus infections.

Keyword: Staphylococcus aureus, antibiotic, resistance, bovine, human

Background: Thrombosis is a complex disorder that occurs in a chain of events including platelet adhesion, activation and aggregation, which depend on genetic and environmental factors. In the formation of a thrombus, there are predisposing factors including cardiac malformation, acquired protein deficiency, polymorphism and genetic predisposition.

Methods: Forty rats were divided into five groups. Thrombosis was induced in all groups except Sham group. Group-1: Sham; Group-2: Enoxaparin; Group-4: EGF; Group-5: EGF+Enoxaparin. The treatments were applied 2 hours preoperatively, then postoperatively at 48 hours. Rats were sacrificed 7 days after the 2nd injection. Tissue samples were examined with hematoxylin-eosin, trichrome, VEGF, VWF, CD34 and CD68.

Results: Neovascularisation, recanalization and macrophage accumulation were statistically significantly higher in the EGF+Enoxaparin group than the other groups (p<0.05), and the volume of thrombus was determined to be significantly lower. Recanalization was found to be higher in the Enoxaparin group than in the other groups. Thrombus resolution was found to statistically significantly regress in the EGF+Enoxaparin group (p<0.05) compared to the other groups. Immunohistochemical antibodies were statistically higher in the EGF+Enoxaparin group than in the other groups (p<0.05).

Conclusion: The results of this study demonstrated that concomitant use of EGF and Enoxaparin has a synergistic effect and contributes significantly to thrombus resolution.

Keyword: Epidermal growth factor, Immunohistochemistry, Thrombosis, histopathology
companies / professional associations / students association.

Results: The new skills and knowledge led to a progressive increase in the labour market insertion: from a percentage of 78.9% from the students graduated in 2012-2013 academic year to a percentage of 87.9% from those graduated in 2015-2016 academic year. The new Emergency Medicine curriculum increased graduates skills and integration on labour market due to the employers demand for veterinary specialists in emergency medicine and due to the increase of emergency cases in the activity carried out in hospitals/cabinets/farms. From the introduction of the new discipline in the compulsory curriculum more than 700 students were certified in emergency medicine.

Conclusion: The study demonstrates that the introduction and development of Emergency Medicine in the compulsory curriculum has a major impact on the quality of higher veterinary education system and by offering new skills and knowledge to graduates plays an important role in their employment opportunities and in promoting and aiding preparedness efforts, to limit the impact of emergencies on patients.

Keywords: emergency medicine, Veterinary Education, employment opportunities

P.A11.15 – SPECIALISED TRAINING FOR VETERINARIANS IN LABORATORY ANIMAL SCIENCE AND MEDICINE - A GLOBAL NEED

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Background: Veterinarians play a key role in research institutions. Legislation in many countries as well as international documents such us the OIE Terrestrial Code, recognises the specific role of the veterinarian in the health and welfare of animals kept and used for experimental purposes. Furthermore, in most experimental animal units, veterinarians are also responsible for animal care personnel and they therefore have a duty to provide proper training for care staff to ensure the welfare and quality of experimental animals. In contrast, veterinary school syllabi in most parts of the world do not include any specific training in respect of either laboratory animals or the health and welfare concerns for animals in experimental conditions.

Methods: The important role played by veterinarians in ensuring laboratory animal quality and their need for access to high quality post-graduate training in laboratory animal science and medicine has been recognised by a number of international organisations. For several years, the American, European, Japanese and Korean Colleges of Laboratory Animal Medicine have all provided a well defined training framework, usually over several years, and those veterinarians who complete the training and certification examination become recognized Diplomates and specialists in Laboratory Animal Medicine. In Europe, more recently, a medium-tier Certificate in Laboratory Animal Science and Medicine has been developed under the VetCEE scheme in a similar way to other certification programs in North America.

Results: Both certification and specialization require long and expensive training, which is not available except in a few countries, making it very difficult for a majority of veterinarians to obtain this type of training. The International Council for Laboratory Animal Science (ICLAS, ) is trying to help to make this training more globally available and, also very importantly, compatible with full time employment. The aim is to increase the number of veterinarians trained in Laboratory Animal Science worldwide, thereby 1) increasing awareness of the need for the proper training of animal care personnel and the need to improve the welfare and quality of laboratory animals; and 2) enabling more countries to achieve recognised high quality science.

Conclusion: To this end, in conjunction with IACLAM (the International Association of Colleges of Laboratory Animal Medicine), and with the financial support of several organizations,* ICLAS offers a yearly scholarship to help veterinarians obtain recognised qualifications in laboratory animal science and medicine. Scholarship applicants must be from countries where this type of training is unavailable and are able to apply to a range of certified programmes in Europe and North America. Details of this initiative will be discussed in this presentation. *Financially supported by AAALAC International, ACLAM, AALAS, CALAS (Canada) and Charles River Foundation.

Keywords: laboratory animal medicine, laboratory animal science, certification


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Introduction: It is necessary to define what is an educational model, since this is very important to understand the competences within the educational process, holistically speaking and not as an isolated entity, since it is very easy to confuse educational model with plan and program of study, when these, in fact, are included in it. A definition that is considered quite broad and inclusive is that described by Calva, Pérez and Gutiérrez (2009), who indicate that “an educational model comprises a set of philosophical, axiological, theoretical and methodological norms and concepts that interact, rationalize and organize the educability of the individual and give identity and direction to the educational practice [...]” (p.2). The elements that constitute the educational model are: the history of the same institution, the philosophical model - which includes a conception of man, society, reality, truth -, the concept of education, and vision, with temporary character, which is guiding the task towards concrete and realizable ideals in given periods of time, updating the mission, making it alive. The components that comprise it are, therefore: 1. Philosophical component, which expresses its ultimate goals. 2. Theoretical component, referred to its internal ordering. 3. Political component, referring to its practical orientation [Gómez and Márquez, 2006, p.12], and 4. Its implementation (process and educational practices) (Abarca, 2007, p.35). This article aims to expose the elements that allow the educational quality seen from the perspective of the
Results and Discussion: Based on the contingency tables that were applied to the answers given by the students, we can not have a solid base to determine the differences between the educational process and the didactics used by the teachers and given this difficulty, another statistical test was carried out. It is the ANOVA to be able to determine differences between these two variables. Based on the results and answering the question of this objective: How do teachers, theoretically, perceive the educational model? It allows to establish that teachers have a bad perception of the educational model, since an educational model requires compliance with the use of ad hoc teaching techniques for learning the theoretical-practical content but also requires the teacher to plan activities organized and articulated within of the teaching-learning process and based on them, a course or certain specific topics or contents of the same can be organized (Tecnológico de Monterrey 2000; 3). The Tecnológico de Monterrey (2000; 3) describes the characteristics and benefits of teaching techniques, which are listed below:

- Encourage students to participate actively in the process of knowledge construction. That is, they are encouraged to investigate on their own, to analyze information obtained, to study how one knowledge relates to another, to suggest conclusions, among others.
- Promote a broad and deep knowledge learning. The processes that derive from its implementation will allow the establishment of a more active and motivating relationship between the students and the topic of the subject.
- Develop intentionally and programmed skills, attitudes and values.
- They allow an experiential experience in which knowledge of reality and commitment to the environment is acquired, to the extent that certain situations expressed in problems, cases or projects are analyzed and resolved.
- Encourage the development of collaborative learning through group activities, either face-to-face or virtual, between students of the same institute or with others from different national or international universities.
- Promote in the teacher the performance of a new role: to facilitate learning and make the student deepen knowledge. This change in the role of the teacher brings as a consequence a change in the student's role, turning him into an active subject that builds his knowledge and acquires greater responsibility in all the elements of the process.
- They allow the participation of the student in the evaluation process of their learning. This leads to the development of their autonomy, their ability to make decisions and to take responsibility for the consequences of their actions. The use of different teaching techniques is a function of the disciplinary field or area of knowledge and the level of training of students. To facilitate its incorporation into the teaching-learning process, as of the summer of 1997, a relationship was established with universities recognized worldwide for their experience in this field. On the other hand, the perseverance that the students have is deduced from table 3 and it is observed that there are differences between the UAI studied and the didactic applied to the educational model, since, only in item 6 where it is specified that the materials used for learning they contain sufficient activities in the development of the UAI there is no difference between the UAI studied and the didactic applied to the educational model. Therefore, it is still observed a deficient didactic when operating the educational model.

Conclusions: The objective is that teachers have a poor perception of the educational model that is the guiding axis of teaching and learning in the School but that in turn involves teaching as a process of planning and action of teaching and learning, learning within the context of the classroom so that students develop the necessary skills for their professional training as Veterinary Doctors. For objective b, there was the opinion of the students, which refer to the fact that there are significant differences between the forms of teaching used by teachers, however, there is no educational model and there should be the same didactic in the process of teaching and learning within the classroom, therefore, it is necessary that teachers reinforce the methodological and didactic process of the educational model of the School.

P.CT1.06 - MID-TERM OUTCOMES OF CRANIAL CRUCIATE RUPTURE IN DOGS SURGICALLY TREATED WITH FUSION TTA TECHNIQUE

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Background: Cranial cruciate ligament (CCL) disease is the most common cause of pelvic limb lameness and stifle joint osteoarthritis in dogs. Surgical treatment is frequently recommended and numerous surgical treatments have been described to stabilize the stifle joint: intraarticular techniques, extraarticular techniques and osteotomy-based techniques (TPL, TTA, CTWO, etc.). Fusion TTA is a recently described TTA (Tibial Tuberosity Advancement) - based technique that uses a Titanium wedge to advance the tibial tuberosity and a titanium plate placed cranially on the tibial tuberosity and tibial crest to prevent tibial tuberosity potential breakage. In this abstract, the mid-term clinical results of dogs surgically treated with this technique are described.

Methods: Twenty dogs affected of cranial cruciate ligament rupture were included in the study. Two dogs were operated bilaterally so, a total number of 22 stifles were treated surgically with the Fusion TTA technique. Twelve patients were females (60%) and 8 were males (40%). The mean weight was 33.1±5.26 kg (mean ± sd) with a range of 24 kg to 49kg. The mean age of the patients was 4.82±2.03 years (mean ± sd) with a range of 3 years to 8 years-old. All the animals were operated by the same surgeon and following the surgical procedure described by the provided (Fusion Implants, UK). The surgical time was between 45 and 60 minutes in all the cases. Clinical evaluations were performed by orthopedic surgeons based on weight bearing, range of motion and pain. All the patients had a follow-up period of at least 1 year after surgery.
Results: All surgical procedures were performed uneventfully. Sixteen operated legs (72.7%) presented a totally normal weight bearing of the limb at the time of suture removal (15 days after surgery). At this period, 5 operated legs (22.8%) showed a mild lameness and one operated leg (4.5%) show a non-weight bearing lameness. No pain was observed at the manipulation of the stifles excepting for the non-weight bearing patient. An x-ray of the operated stiffe of this patient was performed and demonstrate a breakage of the pin and a displacement of the implants. This was a very active patient and also was the one with higher weight (49 kg). A revision surgery was performed and the implants were placed again to the proper position and a larger pin was applied. Two weeks after the second surgery, this patient showed a normal weight bearing with no pain. At the one-year follow-up, all animal showed a normal weight bearing, no pain at the manipulation of the joint, mild to no limitation of the joint range of motion and a total clinical recovery of the operated limbs.

Conclusion: From the preliminary results of this study, we can conclude that the Fusion TTA is an effective technique for the surgical treatment of the cranial cruciate ligament ruptures in the dog. The mid-term outcomes showed a completely functional recovery of all the patients. Long-term studies must be performed to confirm this preliminary results.

Keywords: Cranial-cruciate-ligament-rupture, Fusion TTA

P.CT2.03 - ECONOMIC ANALYSIS OF THE CHANGES IN THE RATE OF PREGNANCY IN INTENSIVE DAIRY HERDS

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Background: The pregnancy rate (PR) is the most complete reproductive parameter, which indicates the proportion of pregnant cows out of the total of cows eligible to be inseminated in a period corresponding to the duration of estrous cycle (21 days); Thus, this parameter is the result of the conception percentage and efficiency of oestrus detection. In the international scientific literature there are reports of effects on changes in PR in the profitability of dairy herds but this information is not available in Mexico.

Methods: A simulation model based on Montecarlo methodology was made using a work sheet that simulates the behavior of a dairy herd and stimulates the profits of several Pregnancy Rates (PR) with a fix; Conception Rate of 30% and modifying only the Oestrus Detection Percentage (OTP). The model uses information from a dairy herd of 966 Holstein cows in the center of Mexico. 2,532 milkings classified: 966 first lactation (38%), 833 of second lactation (33%), 464 of third lactation (18%), 209 of fourth lactation (8%) and 58 of fifth or more lactations (2%). The information was stratified according to number of parturition, thus having 5 stratus.

Results: This research calculates the economic consequences of changes in the PR of an intensive dairy herd, using a mathematical model based on Montecarlo modeling which simulates the behavior of a herd and estimates the profits with different PR’s (between 15 and 30). The simulation is made with a fix conception rate of 30%, so increases in PR are depending only on the oestrus detection efficiency (ODE). In all the scenarios generated by the model, increases in PR had positive effects in annual income per cow/year, but the additional income shows a quadratic tendency with diminishing income when the PR reaches 20%. Thus each additional percentage point of the PR, from 15 to 20%, generates an additional income of US$60.70 per cow/year. Increasing PR from 20 to 25% yeas an additional US$31.26, and of US$10.23 when PR reaches 25 to 30%.

Conclusion: In conclusion, and contrary to expectations, profits have diminishing marginal yields that condition increases in the oestrus detection efficiency to an optimal that can not be surpassed. Since costs of increasing ODE, have to be comparred with the increase benefits that it generates.

Keywords: Oestrus detection, profits per cow, mathematical model, Montecarlo, diminishing yields, profitability, Montecarlo, diminishing yields, Oestrus detection

P.CT2.06 - EVALUATION OF FOUR ANTENATAL GLUCOCORTICOIDS PROTOCOLS IN GLUCOSE AND LACTATE SERUM LEVELS OF PREMATURE KIDS

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Background: Prenatal corticosteroids administration is one of the major advances in obstetrics and neonatology for the prevention of preterm-birth related complications. Plasma lactate concentration is a conventional indicator of tissue hypoxia and has been widely used in the management of critically ill patients. Hyperlactatemia correlates with mortality in adults, children, and neonates. Glucose is a very important substrate of metabolism especially in the brain, and severe and prolonged neonatal hypoglycemia is associated with a risk of long term neurodevelopmental sequelae. The aim of this study was to evaluate the effects of different antenatal dexamethasone regimens on serum lactate and glucose levels of preterm kids.

Methods: We evaluated 38 preterm kids born by elective cesarean section (141 days) divided into four different groups. Group I (n=10) whose mothers received dexamethasone (20 mg/IM) 48 hours before surgery (139 days); Group II (n=9) whose mothers received 2 mg/IM dexamethasone from 133 until 136 days of gestation, plus 4 mg/IM at 137 and 138 days of gestation and an additional dose (20 mg/IM) at 139 days of gestation; Group III (n=9) whose mothers received four doses of dexamethasone (16 mg/IM) every 12 hours from 139-141 days of gestation; and Group IV (n=9) whose mothers received 4 mg/IM at day 137 day, 8mg/IM at day 138, 16 mg/IM at day 139 and 20 mg/kg at 140 days of gestation. Blood glucose and lactate concentrations were measured immediately after birth (T0), at one hour...
An inaspetamtic pseudotuberculosis was isolated from cultures of all the manifestations in the camel farm. Corynebacterium period of 2 months since the first incidence of the clinical manifestations. About 7 infected camels were dead (2.3%) within the breathing, loss of appetite, emaciation and depression. Accompanied with progressive weakness, difficult breathing, loss of appetite, emaciation and depression. Subcutaneous abscesses at various sites of the body manifested with congested, swollen and painless subcutaneous abscesses at various sites of the body. Ages and ages were affected (7.3%) showing clinical manifestations of skin abscess and some cases lost due such clinical manifestations.

Results: are show in Table 1. No difference in blood glucose levels was observed between groups or between moments. Blood lactate levels were significantly different between moments with the highest concentration measured in Group III. Also, lactate levels decreased over time.

Conclusion: We concluded that blood lactate and glucose concentrations of preterm kids after birth are not influenced by different protocols of dexamethasone administration in female goats prior to delivery.

Keywords: newborn, dexamethasone, pulmonary function, mortality, goat

P.CT2.07 - DETECTION AND IDENTIFICATION OF CASEOUS LYMPHADENITIS (PSEUDOTUBERCULOSIS) AMONG DROMEDARY CAMELS IN BAHRAIN.

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Background: Despite the very small livestock population of Bahrain due to the country’s limited area space and Bahrain is considered as one of the livestock importer countries, benefits gained from livestock remain of much impact on the community economy. An investigative survey was conducted in a private dromedary farm in Bahrain as the farm owner complained that there was a mortality among camels in his camel herd showing some clinical manifestations of skin abscess and some cases lost due such clinical manifestations.

Methods: Sterile 10 specimens of pus samples (abscesses) from subcutaneous tissues of thigh, axilla, base of tail, under jaw, prescapular, mesenteric lymph nodes, lunges and liver were collected and brought immediately to the Central Veterinary Laboratory. Blood samples from affected camels obtained. Blood smears stained with Giemsa (Ventana) for blood parasites examination. Impression smears from the sterile specimens were prepared and stained with Ziehl Neelsen’s method for examination for acid-fast bacteria. Identification of Corynebacterium pseudotuberculosis was conducted in the laboratory with the API Coryne strip system.

Results: The investigated private camel farm included over 300 camels out of which about 22 cases of different ages and ages were affected (7.3%) showing clinical manifestations of congested, swollen and painless subcutaneous abscesses at various sites of the body accompanied with progressive weakness, difficult breathing, loss of appetite, emaciation and depression. About 7 infected camels were dead (2.3%) within the period of 2 months since the first incidence of the clinical manifestations in the camel farm. Corynebacterium pseudotuberculosis was isolated from cultures of all the aseptematic pus specimens obtained from abscesses. An in-vitro antibiotic susceptibility test on the isolated strain showed sensitivity towards Gentamycin, Amoxicillin, Erythromycin, Rifampicin and Penicillin with variable grades.

Conclusion: Caseous Lymphadenitis is one of the most important livestock microbial infections in the Middle East Region and can affect all species including camels. It is caused by Corynebacterium pseudotuberculosis and its most characteristic features are abscessation of the superficial lymph nodes and may also affect the internal organs. The disease was reported from many countries in the Middle East region as Egypt, Sudan, KSA and UAE.

Keywords: Caseous lymphadenitis (Pseudotuberculosis), Dromedary Camels, Bahrain

P.CT2.10 - EXPRESSION OF ADAMTS-7 IN MYOCARDIAL DYSTROPHY ASSOCIATED WITH WHITE MUSCLE DISEASE IN LAMBS

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Background: White muscle disease (WMD), or nutritional muscular dystrophy, is an acute disease that results in degeneration and necrosis in cardiac muscle. WMD generally leads to death associated with heart failure in fast-growing young animals. Paleness, degeneration, fibrosis, necrosis and calcification develop in cardiac muscle.

Methods: Histopathological sections of the tissue samples were stained with hematoxylin-eosin (HE) and examined using Western-blot, real-time PCR (RT-PCR) and immunohistochemistry for ADAMTS-7 gene expression in cardiac tissues and the findings were statistically evaluated.

Results: Histopathological examinations revealed fibrosis associated with hyalinization, necrosis and granular calcifications in cardiomyocytes. Western blot and RT-PCR showed a statistically significant upregulation in ADAMTS-7 protein (p<0.05) (p<0.05). Immunohistochemical analysis showed statistically significantly strong cytoplasmic immunopositive cell densities for ADAMTS-7 antibody (p<0.05).

Conclusion: The study results determined that ADAMTS-7 gene was significantly expressed in myocardial dystrophy associated with WMD in addition to its role in the pathogenesis of this disease.

Keywords: Lamb, Myocardial dystrophy, ADAMTS-7, White Muscle Disease
BACKGROUND:
Soybean oil (SO) associated with crude glycerin (CG), is a useful strategy for the replacement of corn in beef cattle diets and improve daily gain, feed efficiency and healthy UFA content in meat. Blood parameters may reflect nutrient status of the cattle are of great interest to breeders. Thus, this study aimed to evaluate the effects of CG and SO association in the diet of feedlot Nellore steers on energetic metabolites in blood such as glucose, total cholesterol, triglycerides, high (HDL) low (LDL) and very low-density lipoprotein fraction (VLDL).

METHODS:
Twelve castrated Nellore steers were used in a completely randomized design (CRD) with two diets: a control diet (CO) and a diet with CG and SO addition. After 21-d adaptation period, blood samples (10 mL) were collected before (0h) and 6h after feeding, from a jugular vein into tubes containing 12 mg of EDTA, and plasma was separated by centrifugation at 2,500×g for 15 min at 5°C and stored at −20°C until analysis by commercial kits (Labtest®). The LDL was calculated by the indirect method, requiring the values of total cholesterol and HDL cholesterol, using the formula: LDL = ¼ x (Total Cholesterol - HDL). Statistical analyses were performed with the assistance of R software as CRD with measures repeated over time.

RESULTS:
Glucose (77.81 mg/dL) and HDL (59.50 mg/dL) were similar in diets and collected times (P > 0.05). Before feeding not differences were observed in triglycerides concentration (14.63 mg/dL), however after 6h feeding steers fed control diet (CO) allowed higher values (14.00 mg/dL vs 10.19 mg/dL; P < 0.01) than those fed SO. Total cholesterol was lower in CO (119.81 mg/dL vs 142.94 mg/dL; P = 0.02) before feeding, but in CO it concentration increased after feeding, resulted in similar total cholesterol in both diets (134.16 mg/dL; P > 0.05). Steers fed CO diet had lower value (48.07 mg/dL and 50.96 mg/dL at 0 and 6h respectively, when compared to animals fed OS (60.39 mg/dL and 57.67 mg/dL at those collected times (P < 0.05), respectively. At 0h the VLDL (2.93 mg/dL) were similar in both diets; after feeding those values remained in CO diet (2.95 mg/dL) and SO showed a reduction (2.09 mg/dL).

CONCLUSION:
All metabolites evaluate were between normal range, SO and CG increased the lipids in the blood plasma suggesting a higher absorption and transport of long chain fatty acids from gastrointestinal tract to the tissues. Blood glucose in cattle isn’t an accurate energetic metabolite, since there is a strong homeostatic control independent of dietary factors.
Background: Neospora caninum is one of the most common pathogens caused of abortion with great economical losses in cattle industry. Although vertical transmission is the main reason of abortion, sometimes transmission is the main reason of abortion, sometimes the normal gestation and delivery could be occurred. However the offspring has usually latent infections of N. caninum, In Korea, several studies from 1999 to 2004 have reported that the rate of N. caninum infections were 13%~35% with depending on the region and farm. In this study, we examined the abortion rate of Neospora seropositive cow and the relationship between seroprevalence of dam and offspring’s birth weight.

Methods: This study was conducted with total 286 of Korean Hanwoo (beef type) born between 2002 January and 2016 April. The N. caninum infection was confirmed with ELISA detection kit (IDEXX). All sera were also examined for brucellosis with ELISA kit (IDEXX).

Results: The nineteen cattle showed positive results in N. caninum antibody test among 286 sera. All of N. caninum seropositive individuals were born from seropositive dam or purchased from other farm. The seropositive results of two calves were maintained at 4, 6, 7, and 15 months later from first test, however other 178 sera had been seronegative for those period. Total number of pregnancy was 35 times at 13 seropositive cows in the last 13 years, among them 14 times abortions were occurred. The abortion rate was higher than seronegative cows in this herd.; 40% vs. 12.3%. Even though calving was normally happened, the mean birth weight of the eleven seropositive offspring from seropositive dam was very low (21.8 Kg, SD 1.3) comparing with seronegative dam’s offspring (26.9Kg, SD 2.9).

Conclusion: In this herd, cow to cow transmission of N. caninum has not been observed. The purchase of cow might be main reason of N. caninum infection. Exclusion of seropositive heifer for reproduction program would be economically beneficial to cattle farms.

Keywords: Neospora caninum, Seroprevalence, Hanwoo, birth weight

Disclosure: Y.T. Granja-Salcedo: The authors thank the Sao Paulo Research Foundation (FAPESP, grants Process 2011/00060-8, 2012/23949-3 and 2013/23851-6) and the Program of Support for students of foreign PhD (PAEDEX) for providing financial support. All other authors have declared no conflicts of interest.

Keywords: glucose, cholesterol, triglycerides, Beef cattle, Lipids

P.CT2.14 - RELATIONSHIP BETWEEN SEROPREVALENCE OF NEOSPORA CANINUM AND OFFSPRING’S BIRTH WEIGHT IN HANWOO

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Results: The abortion rate was higher than 13%~35% with depending on the region and farm. Total number of pregnancy was 35 times at 13 seropositive cows in the last 13 years, among them 14 times abortions were occurred. The abortion rate was higher than seronegative cows in this herd.; 40% vs. 12.3%. Even though calving was normally happened, the mean birth weight of the eleven seropositive offspring from seropositive dam was very low (21.8 Kg, SD 1.3) comparing with seronegative dam’s offspring (26.9Kg, SD 2.9).

Conclusion: In this herd, cow to cow transmission of N. caninum has not been observed. The purchase of cow might be main reason of N. caninum infection. Exclusion of seropositive heifer for reproduction program would be economically beneficial to cattle farms.

Keywords: Neospora caninum, Seroprevalence, Hanwoo, birth weight

Disclosure: Y.T. Granja-Salcedo: The authors thank the Sao Paulo Research Foundation (FAPESP, grants Process 2011/00060-8, 2012/23949-3 and 2013/23851-6) and the Program of Support for students of foreign PhD (PAEDEX) for providing financial support. All other authors have declared no conflicts of interest.

Keywords: glucose, cholesterol, triglycerides, Beef cattle, Lipids
Conclusion: The rate at which cases of rabies are reported in the media, veterinary clinics and human hospitals is alarming. Although rabies is highly feared by all, yet public awareness and knowledge of its risk factors are still very poor in Nigeria. The overall objective of this study was to evaluate the impacts of rabies campaign on the uptake of anti-rabies vaccination by pet owners.

Methods: A rabies campaign was carried out in Ilfeodun Local Government Area of Kwara State from April 2016 to June 2016. Public address system was used to communicate, inform and educate the youths and adults in Schools, Churches, Mosques, Markets, Town halls and Community centers in the studied areas. Questionnaires were also administered to capture data on rabies, risk factors, and anti-rabies vaccination uptake.

Results: The result showed that awareness was higher and anti-rabies vaccination for dogs increased after the intervention. This study revealed that awareness creation through public educational campaigns might be a very useful approach for pet owners on the control of rabies in our society.

Conclusion: It is our recommendations that government should support regular rabies campaign and consider subsidy on anti-rabies vaccine for the control and total eradication of rabies in Nigeria.
Conclusion: The same T. gondii strains can circulate among wild and domestic animals and humans. Toxoplasma gondii strains are highly diverse among free-living birds of prey, corroborating findings in domestic animals. Studying T. gondii strains from wild animals can be the key for understanding the real diversity of this zoonotic parasite.

Keywords: Birds, Brazilian strains, Toxoplasmosis, free-living wild animals, genotyping

P.PHT1.05 - EPIDEMIOLOGICAL STUDIES ABOUT SALMONELLA WELTEVREDEN FROM WILD GECKO IN SOUTHEAST ASIAN COUNTRIES

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Background: Salmonella is recognized worldwide as an important foodborne and zoonotic human pathogen. Salmonella has a wide prevalence in mammals, reptiles, birds, and environment. In Southeast Asian countries, S. Weltevreden is known to be the predominant serovar of human Salmonellosis such as Vietnam, Thailand, and Malaysia. However, natural reservoir of S. Weltevreden has not been identified yet. Reptile is known to be one of natural reservoir of Salmonella. Wild geckos distribute widely in human residential area and closely contact with humans in those countries. A few reports have been published regarding the prevalence of Salmonella in wild gecko in Southeast Asian countries. Therefore, the main objectives in this study are to identify the prevalence of Salmonella Weltevreden in wild geckos in Southeast Asian countries.

Methods: In the periods from 2012 to 2015, a total of 1,318 intestinal contents of wild geckos were collected in Cambodia (n = 98), Thailand (n = 261), and Vietnam (n = 959) to know the prevalence of Salmonella Weltevreden. These geckos belonged to three species: Hemidactylus platyurus (n = 293), flat-tailed house gecko (Hemidactylus frenatus) (n = 794), and four-clawed gecko (Gehyra mutilata) (n = 60).

Results: Salmonella was isolated from 293 (22.2%) of 1,318 gecko samples. The prevalence of Salmonella in geckos was 16.3% in Vietnam, 17.3% in Cambodia, and 46.0% in Thailand. However, there was no significant difference in the prevalence of Salmonella among these gecko species. Of 293 Salmonella isolates, S. Weltevreden was the most predominant serovar (30.7%) in geckos in all of those countries.

Conclusion: Wild gecko seems to be an important reservoir of Salmonella and source of human Salmonella infection in Southeast Asian countries.

P.PHT1.07 - DEVELOPMENT OF ACCURATE AND RELIABLE ANALYTICAL METHOD FOR COMPREHENSIVE VETERINARY DRUGS IN CHICKEN AND EGG PROCESSED FOODS

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Background: Since the outbreak of avian flu, chicken products have been imported as processed foods (PFs) instead of as raw products. Although veterinary drugs are surely used to prevent and treat diseases in chickens, there are only a few analytical methods for PFs due to their complex matrices. Therefore, we developed a new high-quality analytical method for comprehensive veterinary drugs in chicken and egg PFs that focuses on (1) optimization of extraction and clean-up, (2) assessment of quality assurance via method validation and Proficiency Testing, and (3) applicability to real samples.

Methods: The analytical method was developed on the basis of the following three main objectives: (1) optimization of extraction and clean-up process; the first extraction by diatomaceous earth mini-cartridge, then secondary extraction; the first extraction by 5 mL ethyl acetate, then secondary extraction by 30 mL acetonitrile.

Results: (1) Extraction and clean-up: Applying our previously developed method to deep-fried chicken (FC), five analytes were not extracted sufficiently due to the interference of high lipids in FC. Therefore, we adapted a two-step extraction; the first extraction by ethyl acetate which can dissolve lipids, then secondary extraction using acetonitrile as in our previous method. As a result, acceptable recoveries of over 70% were obtained. However, the extracted solution contained huge amounts of lipids that could cause an increased/decreased detector response (Matrix-effect). Therefore, a clean-up process was adopted using a diatomaceous earth mini-cartridge that can effectively eliminate lipids. In particular, we found that the elution efficiencies of 5 analytes were significantly improved using the second extraction solution instead of intact acetonitrile. Moreover, acceptable Matrix-effect values (−20% ~ +20%) were obtained for 36 out of 37 analytes of FC, indicating that this clean-up process could efficiently eliminate lipid co-extracts. (2) Quality assurance: This new
method was validated according to Japanese guidelines. The numbers of analyte satisfied the criteria were 34 in FC and 37 in non-fried chicken cutlet (CC) and chicken muscle. Moreover, by applying to wider analytes and products, 45 out of 47 analytes satisfied the criteria in boiled and raw egg. Next, we adopted this method to Proficiency Testing samples. The calculated Z-score satisfied the criteria value (<2), and the quantitative values were almost identical to those calibrated by the previous method. (3) Applicability: We applied this method to 85 real samples and detected 3 residual samples in FC and 5 in CC, indicating that this new method has enough applicability for inspection. Furthermore, some detected drugs in the PFs were different with 17 residual samples in chicken muscle.

**Conclusion:** We developed a reliable and accurate method for the analysis of veterinary drugs in chicken and egg PFs that is useful for routine monitoring.

**Keywords:** Two-step extraction, detected veterinary drugs in processed foods, veterinary drug, diatomaceous earth mini-cartridge clean-up, chicken and egg processed food

**P.PHT1.08 - ORGANOLEPTIC CHARACTERISTICS OF CAMEL AND DONKEY MILK - A NEW OPPORTUNITY FOR HUMAN PEOPLE INTOLERANT TO MILK**

Claudio Galloittini
Food Safety, ESI - Euroservizi Impresa Sr, Torgiano (PG)/ITALY

**Background:** In the countries of East and North Africa, as well as in some Asian countries, camel milk is still the main food source for the nomadic people, as it was for the Bedouins of Arabia before the oil boom. Donkeys farm at the same time represent a good alternative for the recovery of marginal agricultural areas, often abandoned. Milk is one of the most common causes of food allergies among children under one year of age. No specific therapy exists for this allergy, and thus the only feasible response is to avoid consumption of milk and derived products. Camel and donkey milk are alternatives.

(Fig. 1: (a) Arabian Camel in UAE; Italian Donkey, (b) Romagnolo’s race.)

**Methods:** Milk samples were collected in sterile containers and stored at –40°C until analysis. The samples taken at the same stage of lactation were thawed, pooled, and portions were taken for analyses. Camelus dromedaries milk (20 samples) was obtained from healthy camel; Equus asinus milk (20 samples) was obtained from healthy donkey. Camel and donkey milk samples were analyzed for pH, fat, total protein (casein, whey protein), lactose, and mineral content. (Animals

**Results:** Camel milk contained higher protein and less lactose as compared to human milk. Camel milk is known for its glycemic control effect, for high content of protein, casein, potassium and Vitamin C. Donkey milk contains protective proteins and also a higher amount of zinc, was shown to be lower in protein and fat and richer in lactose, more similar to human milk than to other mammals.

**Conclusion:** The donkey’s milk is recommended for the containment of allergies to cow’s milk proteins in children and adults, the regularization of the gastrointestinal flora, prevention of cardiovascular, inflammatory and autoimmune diseases. Milk on both camel and donkey could be a good alternative for infants or newborns deprived of mother’s milk.

**Keywords:** Camel, Donkey, Milk, Milk Intollerance, Lactose Intollerance

**PP3 Poster Presentations 3**
**Tuesday, May 8, 2018**
**09:00 – 14:30**

**P.AT1.016 - COMPARISON OF THREE METHODS FOR LDL CHOLESTEROL MEASUREMENT IN TWO SPECIES OF DOMESTIC ANIMALS**

Jose H. Osorio
Universidad De Caldas, MANIZALES/COLOMBIA

**Background:** There are two patterns of lipid profile in animals as follow: high-density lipoprotein (HDL) pattern and low-density lipoprotein (LDL) pattern, where HDL-cholesterol (HDL-c) or LDL-cholesterol (LDL-c) in blood arises respectively after food ingestion. There are three methods for serum LDL-c measuring as follow: 1. The direct method, where serum LDL-c levels are determined without the need for any pre-treatment or centrifugation of the sample, the method depends on the properties of a detergent which solubilizes only the LDL so that LDL-c is released to react with the cholesterol esterase, cholesterol oxidase and chromogens to give color. 2. The precipitating method was non LDL-c is precipitated with polivinilic acid, and the supernatant cholesterol remaining is measured using enzymatic-colorimetric method, and 3. The formula method, proposed by Fridewald in 1972, were LDL-c is obtained using the following formula: LDL-c= total cholesterol – VLDL-c – HDL-c. Total cholesterol is measured using enzymatic-colorimetric method; VLDL-c is calculated dividing the value of triglycerides in 5 after measuring triglycerides using enzymatic-colorimetric method, and values of HDL-c are found by using direct method or precipitating method by using phosphontungstic acid.

**Keywords:**
- Lipid profile
- HDL-c
- LDL-c
- Direct method
- Precipitating method
- Formula method
- Fridewald
- Polivinilic acid
- Cholesterol oxidase
- Colorimetric method
Methods: The present project was approved by Universidad de Manizales ethics committee on second semester 2017. 50 samples without discrimination of age, sex, or breed from a LDL-pattern specie (pig), and 50 samples from a HDL-pattern specie (buffalo), were obtained after 10 hours fasting and LDL-c were measure by the three above named methods. Data were analyzed using the program IBM SPSS Statistics 23, accepting statistic difference when p values was < 0.05.

Results: LDL-c values for pig samples using direct method (mg/dl) were of 34.8; 24.2; 87.4; and 11.5 for average, minimum, maximum, and standard deviation respectively, for precipitating method were 40.37; 20.80; 56.90 and 8.45 respectively, and for formula method were 38.38; 22.92; 55.37 and 7.94 respectively. The p values when comparing direct method vs precipitating method, direct method vs formula method, and precipitating method vs formula method in pig samples were 0.158, 0.227, and 0.602 respectively. LDL-c values for buffalo samples using direct method (mg/dl) were of 34.03; 13.70; 47.90 and 6.82 for average, minimum, maximum, and standard deviation respectively, for precipitating method 33.77; 12.41; 48.20 and 7.28 respectively, and for formula method were 37.17; 14.87; 65.80 and 9.41 respectively. The p values when comparing direct method vs precipitating method, direct method vs formula method, and precipitating method vs formula method in buffalo samples were 0.853, 0.059, and 0.06 respectively.

Conclusion: No significant statistical difference was found when comparing the three above mentioned methods for LDL-c measurement in pig nor in buffalo, then anyone of the analyzed methods can be used for LDL-c measurement in samples from species with HDL or LDL pattern.

Keywords: animals, cholesterol, laboratory, Lipids, metabolism

P.AT1.05 - THE USE OF COMBINATION OF ANTIBIOTHERAPY AND DIMETYLSULPHOXIDE IN THE TREATMENT OF INFECTIOUS KERATOCONJUNCTIVITIS IN CALVES

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Background: Infectious keratoconjunctivitis in cattle is a contagious infectious eye disease that is mostly observed in the summer months and can cause vision loss if it is not treated in early stages. In the treatment of this disease; it is advised to be perform both parenteral and local administrations according to the progression of the disease. The purpose of this study is to compare efficiencies of a parenteral antibiotic combined with subconjunctival (SC) antibiotic and anti-inflammatory drug combination.

Methods: In the study, natural infected IBK with 12 calves were used. Together with tachémation, blepharospasm, photophobia; conjunctivitis at varying stages, corneal opacity, ulcer and perforation symptoms were determined in the animals. For bacterial agent analysis; in the swab samples were collected from the eyes of the animals. After the single dose oxytetracynline LA (20 mg/kg IM) was administered, the animals were randomly divided into 2 treatment groups, each of which consisted of 6 eyes. While 40 % dimethylsulphoxide+penicillin G 800.000 IU mixture via SC was given to the group 1, dexamethasone+penicillin G 800.000 IU mixture via SC was given to the group 2. These administrations were repeated 4 times at 3-day intervals.

Results: While M. bovis in 5 eyes, S. aureus in 1 eye, both M. bovis and E. coli in 1 eye and both E. coli and S. aureus in 1 eye were isolated, any agent was not isolated in 3 eyes. At the end of the treatment, it was determined that except for the 2 cases, all the cases completely recovered. There were no differences between the two groups in terms of recovery time.

Conclusion: As a consequence, dimethylsulphoxide could be used in the treatment combination with penicillin G as an alternative to dexamethasone in the IBK cases

Keywords: treatment, Calf, Dimethylsulphoxide, IBK, Moraxella bovis

P.AT1.07 - COMPARISON OF TWO METHODS FOR HDL CHOLESTEROL MEASUREMENT IN TWO SPECIES OF DOMESTIC ANIMALS

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Background: There are two patterns of lipid profile in animals as follow: high-density lipoprotein (HDL) pattern and low-density lipoprotein (LDL) pattern, where HDL cholesterol (HDL-c) or LDL cholesterol (LDL-c) in blood arises respectively after food ingestion. There are two methods for serum HDL-c measuring as follow: precipitating method were non HDL-c is precipitated with phosphotungstic acid, and the supernatant cholesterol remaining is measured using enzymatic-colorimetric method, and direct method where serum HDL-c levels are determined without the need for any pre-treatment or centrifugation of the sample, the method depends on the properties of a detergent which solubilizes only the HDL so that HDL-c is released to react with the cholesteral esterase, cholesterol oxidase and chromogens to give color.

Methods: The present project was approved by Universidad de Manizales ethics committee on second semester 2017. 50 samples without discrimination of age, sex, or breed from a LDL-pattern specie (feline), and 50 samples from a HDL-pattern specie (porcine), were obtained after 10 hours fasting and LDL-c were measure by the two above named methods. Data were analyzed using the program IBM SPSS Statistics 23, accepting statistic difference when p values was < 0.05.

Results: HDL-c values for cat samples using direct method (mg/dl) were of 33.88; 11.70; 73.1 and 16.74 for average, minimum, maximum, and standard deviation respectively, and for precipitating method were 33.32; 9.9; 68.9 and 15.12 respectively, with a p value of 0.626 showing no significant statistical difference. HDL-c values for swine samples using direct method (mg/dl) were of 30.19; 19.30; 45.6 and 6.57 for average, minimum, maximum, and standard deviation respectively, and for precipitating method were 33.41; 4.20; 46.90 and 7.28 respectively, with a p value of 0.876 showing no significant statistical difference.
Conclusion: Anyone of the analyzed methods can be used for HDL-c measuring in samples from species with HDL or LDL pattern.

Keywords: lipid, metabolism, cholesterol, animals, laboratory

P.A.T1.08 - IFNγ EXPRESSION IN CATTLE EXPERIMENTALLY INFECTED BY TRYPANOSOMA VIVAX

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Background: Trypanosoma vivax infections in livestock have been occurring with increasing frequency worldwide, however the disease still poorly studied and some aspects of its pathophysiology remain obscure. Knowledge of the immune response profile is important not only for understand the host-parasite relationship, but also for the development of new treatment strategies. IFNγ is a proinflammatory cytokine produced predominantly by NK and T cells and, seems to be involved in parasitemia control, contributing to host survival in T. b. brucei, T. b. rhodesiense and T. cruzi infections.

Methods: The present study aimed to determine the variation of IFNγ profile by RT-qPCR in cattle infected by T. vivax. Three Girolanda cows (E1 to E3) were infected with 2.0 x 10^7 trypomastigotes of T. vivax, “Lins” isolate. Whole blood were collected in EDTA tubes using Vacuotainer® system immediately before ISM treatment (D0), at 30 (D30), 60 (D60) and 90 (D90) days after infection at the dose of 1 mg/kg IM. PCR and LAMP tests were performed as described by Cortez et al. (2009) and Njiru et al. (2011), respectively.

Results: Figure 1. RT-qPCR - relative quantification of IFNγ from three T. vivax experimentally infected cows (E1 to E3).

Each animal had its own profile of IFNγ expression (Figure 1). Cows E1 and E2 presented a more similar behaviour of the expression IFNγ, with an increase in the early acute phase and in the late stage of the chronic phase of the infection, while animal E3 presented a reduction in the expression of this cytokine during the entire period. The E3 cow, unlike E1 and E2, presented more parasitic peaks in the chronic phase of the disease (data not shown).

Conclusion: It seems that an increase of IFNγ s beneficial to the host and is related with the control of parasitemia. More studies are needed to contribute to a better understanding and control of this disease. We thank São Paulo Research Foundation (FAPESP) for financial support in the form of grant given through procedural number 2014/10572-5 and 2016/17401-6 and research aid number 2012/02284-3.

Keywords: Bovine, trypanosomosis, cytokine, qPCR

P.A.T1.10 - DETECTION OF TRYPANOSOMA VIVAX AFTER USE OF ISOMETAMIDIUM CHLORIDE IN BOVINES NATURALLY INFECTED

Fabiano A. Cadioli1, Kayo J.G.D.A. Castilho Neto2, Ana Beatriz B.D.B.D.C. Favorito1, Otavio L. Fidelis Junior1, Paulo H. Sampaio3, Thiago M.V. Silva4, Augusto R. Taira4, T. vivax DNA after ISM treatment are described in Table 1. The results on the persistence of detection of T. vivax DNA after ISM treatment (D0) on D1 and weekly up to 119 days after infection (DAI). Samples were aliquoted in microtubes containing RNAlater® solution and cryopreserved in -80°C until the moment of use. For total RNA extraction RiboPure™-Blood® commercial kit was used. An aliquot of the total RNA was converted into cDNA using GoScript™ Reverse Transcription System®. The RT-qPCR was performed as described by Puech et al. (2015) and samples relative quantification the equitation proposed by Livack and Schmittgen (2001) was used.

Results: Table 1. Detection of Trypanosoma vivax DNA in naturally infected by T. vivax in livestock have been occurring with increasing frequency worldwide, being responsible for major economic losses in Africa and Central and South America. In cattle, T. vivax diagnosis is difficult, since the parasite triggers nonspecific symptoms and there are fluctuations in parasitemia and even apparently aparasitemic intervals which difficult its diagnosis.

Methods: The aim of this study was to evaluate the capacity of techniques known as Loop-mediated Isothermal Amplification (LAMP) and conventional Polymerase Chain Reaction (cPCR) for T. vivax detection after isometamidium chloride (ISM) treatment in bovines naturally infected. This work was approved by the Commission of Ethics of animals use with the protocol number 9.277/16. Thirty adult Girondans cattle (B1 - B30) naturally infected by T. vivax were used. Blood was collected in EDTA tubes using Vacuotainer® system immediately before ISM treatment (D0), at 30 (D30), 60 (D60) and 90 (D90) days after treatment at the dose of 1 mg/kg IM. PCR and LAMP tests were performed as described by Cortez et al. (2009) and Njiru et al. (2011), respectively.

Results: For all the samples tested, there was the amplification of the fragment of the GAPDH reference gene, showing no presence of PCR inhibitors. The specificity of the LAMP reaction for T. vivax was shown by the dissociation temperature of the amplified products of the positive controls and positive test samples, which was 87.52±0.5 °C. The results on the persistence of detection of T. vivax DNA after ISM treatment are described in Table 1. More studies are needed to contribute to a better understanding and control of this disease. We thank São Paulo Research Foundation (FAPESP) for financial support in the form of grant given through procedural number 2014/10572-5 and 2016/17401-6 and research aid number 2012/02284-3.
infected cattle after ISM treatment by LAMP and cPCR tests.

Conclusion: Positive samples between D30 and D90 indicate that T. vivax can hide where the ISM does not reach adequate therapeutic levels, such as CSF fluid and can return to circulation periodically, and may infect other animals, so it is important to monitoring herds under ISM treatment, the high capacity of T. vivax detection by LAMP. We thank São Paulo Research Foundation (FAPESP) for financial support in the form of grant given through procedural number 2015/25397-6.

Keywords: molecular test, treatment, Bovine, trypanosomosis

P.AT1.11
AVIAN BORNAVIRUS INFECTION AMONG PSITTACINES IN TAIWAN
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Background: Parrot bornavirus (PaBV) infection is an emerging, life threatening neuropathic disease in psittacine birds, also known as the cause of proventricular dilation disease (PDD), and can be easily confused with other findings, including coma, arrhythmias, vomiting and sudden death. PaBVs belong to the genus Bornavirus, and grouped as 2 different species: Psittaciform 1 bornavirus (PaBV 1, 2, 3, 4 and 7) and Psittaciform 2 bornavirus (PaBV 5). The epidemiology information of PaBV infection in Taiwan is largely unknown.

Methods: To investigate the presence of virus in the field, we have initiated a surveillance program of avian bornavirus in psittacine samples collected from multiple regional and local veterinary hospitals island wide.

Results: To this date, the virological prevalence rate based on our study is approximately 16%. Among the 30 bird samples identified positive by nested RT-PCR, the phylogenetic analysis of the M and N genes revealed that PaBV-2 (13.3%, 4/30), PaBV-4 (83.3%, 25/30) and a rare PaBV-5 (3.3%, 1/30) co-circulate in the field of Taiwan. Viral antigens in infected tissues were evidenced with immunohistochemistry staining using diseased bird serum. With above findings, a quail muscle cell line QM7 was adopted for virus isolation. We have successfully isolated all three types of PaBVs from infected tissue homogenates, and the intracellular localized viruses have been validated by western blot and RT-PCR. Moreover, recombinant nucleoprotein (p40) of avian bornavirus has been expressed and purified for antiserum production and future development of diagnostic assays.

Conclusion: Collectively, a survey of avian bornavirus infection among psittacines is conducted for the first time in Taiwan, and multiple types of PaBV have been isolated and characterized. Further effort will be made on developing essential strategies towards disease management and control.

Keywords: Virus isolation, proventricular dilation disease, Avian bornavirus, PaBV, Phylogenetic analysis

P.AT1.12 - ECHOCARDIOGRAPHIC EVALUATION OF MYOCARDIAL INFARCTION IN RATS
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Background: Increased incidence of myocardial infarction (MI) has recently emerged as the cause of cardiovascular morbidity and mortality worldwide. Echocardiography is well-established diagnostic tool for invasive and accurate evaluation of cardiac function in clinical practice. The recent technological advancements in the echocardiographic device allow thorough echocardiographic examination even in laboratory rodents with small size. In this study, we evaluate the cardiac function using echocardiography in rat myocardial ischemia/reperfusion injury model, which might be necessary for the efficacy evaluation in the new drug development.

Methods: Myocardial infarction was induced by transient ligation of left anterior descending coronary artery in adult male Sprague-Dawley rats. The echocardiography was performed from 2 hours to 1 week after the induction of MI.

Results: The values of fractional shortening (FS) and ejection fraction (EF), an index reflecting the left ventricular systolic function, were significantly reduced in the MI group than in the sham group. The E' a indicators of myocardial infarction using strain and strain rate imaging. Deformation imaging also was showed in myocardial infarction.

Conclusion: The goal of this study is to investigate the early phase of cardiac function of rat myocardial I/R injury model using echocardiography. During the whole experimental period, the ventricular diastolic dysfunction is not able to recover despite the left ventricular systolic function is able to recover. Rat myocardial I/R injury model and the assessment of cardiac function in early phase might be a useful tool for the new drug development of preventing myocardial infarction.

Keywords: myocardial infarction, echocardiography, diastolic, systolic, strain

P.AT1.14 - PREVALENCE OF COMMON DISORDERS IN FELINE PATIENTS IN REPUBLIC OF KOREA: A SURVEY OF SMALL ANIMAL VETERINARY PRACTICE
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Background: Companion animals have come to play an important part in the lives of many people. Veterinary service for companion animal health management is expected to further grow and become more specialized as its owner’s demands and expectations for companion animal care increases. The need for awareness, monitoring, and better understanding of epidemiology and pathogenesis of companion animals to ensure appropriate year-round control measures has increased for companion animal health care. In this study, we surveyed the main health problems and medical service in feline patients attending small animal veterinary clinics in Seoul, Republic of Korea.

Methods: A proprietary computer-based practice management system (Into Vet., IntoCNS) was used for data collection. The medical records of feline patients collected includes animal identification number, species, date of birth, breed, gender, neuter status, and clinical information data. Participants in this study were randomly selected after the direct interview. The data were analyzed based on International Classification of Disease of World Health Organization.

Results: A total of 1,842 medical records of feline patients were analyzed from veterinary clinics sharing data with IntoVet from 1st January 2015 to 31nd October 2017. The common health problems or medical service for companion animals to ensure preventive medicine (18.73%), follow by digestive diseases (14.88%), neutralization surgery (13.30%), skin diseases (12.49%), visual diseases (9.17%), genitourinary diseases (5.54%), and respiratory diseases (5.21%). The common breed attending to the small animal clinic were Korean short hair (47.45%), followed by Persian (9.88%), Russian Blue (7.11%), Scottish Fold (6.51%), Turkish Angora (5.48%), and Siamese (5.43%).

Conclusion: This study described the main clinical disorders and most common breeds in cats brought to the clinics in Seoul. Preventive medicine is an important part of feline health care. The most common medical problems in cats include digestive diseases, which includes dental care, stomatitis, gingivitis and gastrointestinal disease. The vaccination is one of the most common medical service, which prevents viral pathogens such rabies, feline calicivirus, feline herpesvirus-1, feline parvovirus, feline viral rhinotracheitis, feline panleukopenia, and feline leukemia. Preventive medicine for parasitic diseases such as feline heartworm disease and gastrointestinal parasite infection was also important part in feline medicine. Additionally, we suggest that further studies statistically analyzing medical records contribute to animal health management by predicting the pattern of disease occurrence.

Keyword: medical records, common disorders, feline, survey of small animal veterinary practice

P.CT1.02 - PREVALENCE OF MEDIAL CORONOID DISEASE AND QUANTITATIVE RADIOGRAPHIC ASSESSMENTS OF MEDIAL CORONOID PROCESS AND SUBTROCHLEAR-ULNAR REGION IN LABRADOR AND GOLDEN RETRIEVERS

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Background: - Type of article: A retrospective clinical study. - Medial coronoid disease (MCD) is a common leading cause of thoracic limb lameness in dogs. Despite CT and arthroscopy are gold standards for MCD diagnosis, radiography is the most available diagnostic imaging modality in veterinary practice. The objective of this retrospective clinical study is to determine the prevalence of MCD in lame dogs and to quantify, for the first time, the radiographic changes associated with medial coronoid process (MCP) and subtrochlear ulnar region in Labrador and Golden Retrievers with confirmed MCD.

Methods: Purebred Labrador and Golden Retrievers > 7 months of age (n=143, 206 elbows) without (control group, n=69, 99 elbows) and with (diseased group, n=74, 107 elbows) confirmed MCD were included. The prevalence of MCD in lame large-breed dogs was calculated. Mediolateral and craniocaudal radiographs of elbows were analyzed to assess the MCP length and morphology and subtrochlear-ulnar width. Mean grayscale value (GV) was calculated for radial and subtrochlear-ulnar zones. Variables were compared between groups using 2-tailed t-test.

Results: The prevalence of MCD was 20.8%. Labrador and Golden Retrievers were the most affected purebred dogs (29.6%). Elbows with confirmed MCD had short [P <.0001] and deformed (~95%) MCP, with associated MCP osteophytosis (7.5%). Subtrochlear-ulnar sclerosis was evidenced in ~96% of diseased elbows, with a significant increase [P <.0001] in subtrochlear width and GV. Radial GV did not differ between groups. Periarticular osteophytosis was identified in 51.4%. MCP length and morphology, and subtrochlear-ulnar width and GV varied significantly in dogs with confirmed MCD compared to control.
Conclusion: Quantitative radiographic assessments of MCP and subtrochlear-ulnar region are of value in MCD diagnosis. Validation of the reported radiographic measurements using the gold standard imaging modalities is still warranted.

Keywords: Medial coronoid process, Labrador and Golden Retrievers, Prevalence, Quantitative, Radiographic assessment

P.CT1.03 - EFFECTIVE TREATMENT OF CANINE CATARACT WITH THE USE OF LONG TERM ORAL CHLORAMPHENICOL AND CIPROFLOXACIN EYE DROPS THERAPY

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Background: A cataract is opacity of the lens or its capsule. Cataracts are a common cause of visual impairment and blindness in dogs, especially among elderly dogs in Sri Lanka. There are several causes for cataracts. Cataracts can be categorized into four stages depending on the severity of the cataract. Cataracts also present an important welfare consideration for the pet owners. The visual impairment in dogs due to cataracts may lead to increase nervousness, aggression and reluctant to exercises. Phacoemulsification is the treatment of choice for cataract surgery in dogs with success rates of between 70 and 95 per cent having been reported. But this method is associated with a lot of surgical complications and also not cost effective for pet owners in Sri Lanka. The objective of this study is to determine the success of long term use of oral Chloramphenicol with Ciprofloxacin eye drops to clear the eye opacity and correct the visual impairment.

Methods: A total of 40 dogs and 76 eyes which were presented with cataract to the ‘Suwana’ Pet Care Animal Hospital, 4th Lane, Nagoda, Kalutara, Sri Lanka during 31st January 2015 to 30th October 2017 were included in this study. Pomeranians, Sri Lankan dogs, Cocker spaniels, German Shepherds, Dobermans, Labrador retrievers and Terriers were the most common breeds presented with cataracts.These dogs were treated with a long term therapy of chloramphenicol (250 mg capsules two times/ day) combined with Ciprofloxacin HCL eye drops (3 mg/ml three times / day) for a period of 04 months. These dogs were evaluated on eye opacity, response to light and vision on white objects. The dogs were observed before initiating the treatment and every 3 weeks after initiating the treatment.

Results: All dogs with stage 1 cataract (total number of 24 eyes) responded very well to the treatment. The cloudiness of the eyes disappeared within 3 months and the respective dogs obtained complete vision. Of the 30 eyes affected with stage 2 cataract, 23 eyes got cleared and gained complete vision after 4 months treatment, while in the remaining eyes the cloudiness reduced with improved response to object movements. The eyes presented with stage 3 cataract (total number of 14 eyes) could not obtain clearance completely but were sensitized to light beam after treatment. The eyes with stage 4 cataract were remained with the blindness and white opaque.

Conclusion: As per results of this study when dogs were presented with stage 1 and 2 cataracts the success rate of the treatment was very high when compared with the success rate of treatment of stage 3 and 4 cataracts. This study signifies that early treatment with oral Chloramphenicol and Ciprofloxacin eye drops is associated with favorable outcomes; disappearing cloudiness of eyes and gaining complete vision. Moreover this study may be helpful for humans as an alternative for surgical intervention.

Keywords: cataract, Chloramphenicol, Ciprofloxacin, Long term treatment, Cloudiness

P.CT1.04 - COMPARISON THE PREVALENCE OF CANINE VECTOR-BORNE PATHOGENS INFECTION IN DOGS BETWEEN TWO DIFFERENT GEOGRAPHIC REGIONS IN REPUBLIC OF KOREA

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Background: Canine vector-borne diseases (CVBds) pathogens such as Dirofilaria immitis, Babesia spp., Anaplasmaphagocytophilum, Bartonella spp., Ehrlichia spp., and Mycoplasma haemocanis cause diseases in dogs worldwide. These pathogens are transmitted by a variety of arthropod vectors, including ticks, fleas and mosquitoes. Dogs infected with these pathogens may develop either a sub clinical infection or clinical signs of anemia, thrombocytopenia, and neutrophilia. But acute or sub-clinical infection may remain
asymptomatic for several years. Even more, infected dogs can be competent reservoir hosts of several zoonotic pathogens and serve as a readily available source of transmission disease for many blood-feeding arthropods. The Prevalence of CVBDs could be affected by geographic distribution and environmental factors. Jindo is an island located south-west and Gyeongju is a small city located south-east of Republic of Korea (ROK). The objective of this study is to investigate the prevalence of canine vector-borne pathogens in dogs in two different geographic regions in Republic of Korea.

Methods: From June to November 2017, blood samples were collected from 231 dogs from private animal shelters and breeders in ROK. All of these dogs were native Jin-do dogs and Gyeongju Donggogoeong Dog. Blood samples collected from dogs were tested onset using a commercial ELISA assay kit (SNAP 4DX; IDEXX Laboratories, Inc., U.S.A) for Dirofilaria immitis antigen and for antibodies against Anaplasma phagocytophilum, Anaplasma platys, Borrelia burgdorferi, Ehrlichia canis, and Ehrlichia ewingii. The second set of whole blood samples were tested at a commercial reference laboratory for vector-borne pathogens including Anaplasma phagocytophilum, A. platys, Babesia spp., Bartonella spp., Mycoplasma haemocanis, Candidatus Mycoplasma haemotaparum, Ehrlichia canis, E. ewingii, E. chaetodrini, Hepatozoon canis, H. americanum, Leishmania spp., and Rickettsia rickettsia using a real-time PCR (Tick/Vector Comprehensive Real PCR Panel Canine, IDEXX Laboratories).

Results: The pathogen with the highest prevalence rate was D. immitis (19.5%), followed by Mycoplasma haemocanis (8.2%), Babesia gibsoni (7.3%), A. phagocytophilum (3.0%), and Candidatus Mycoplasma haemotaparum (3%). The lowest were B. burgdorferi and E. canis both with 0.4% prevalence rate. For Jin-do dogs, the highest prevalence was D. immitis (14.5%), followed by Babesia gibsoni (12.2%), and A. phagocytophilum (5.0%). For Gyeongju Donggogoeong Dog, D. immitis (26.0%) was the most prevalent pathogen followed by Mycoplasma haemocanis (15.0%), Candidatus Mycoplasma haemotaparum (3.0%), and E. canis (1.0%).

Conclusion: The findings of this study reveal that Jindo dogs and Gyeongju Donggogoeong Dogs are frequently exposed to D. immitis, A. phagocytophilum, Babesia gibsoni, and Mycoplasma haemocanis in ROK. In addition, dogs that were positive for CVBDs test have no evidence clinical signs or anemia. These results also indicate that veterinarians or breeders need to recommend the repeated examination to early detect and prevent disease even if they do not show clinical signs. Dogs should be regularly checked up to prevent and control vectorborne disease because they are susceptible candidates as reservoirs of these pathogens.

Keyword: Canine vector-borne diseases (CVBDs), D. immitis, Babesia gondii, Prevalence, Real-time PCR, P.CT1.05 - DOG ERYTHROCYTE ANTIGEN 1 TYPING SURVEY FOR DOMESTIC CANINE BREEDS IN REPUBLIC OF KOREA
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Background: Canine blood type is recognized based on international standardization as Dog Erythrocyte Antigen (DEA) 1, 3, 4, 5, 6, 7 and 8. DEA 1 is the most important blood type with its high degree of antigenicity for acute transfusion reaction. Previous studies have described its prevalence and frequencies depending on breeds. This study was conducted to evaluate the distribution of DEA 1 for domestic canine breeds in Republic of Korea.

Methods: A total of 555 blood samples were collected from 12 different canine breeds provided by animal clinics, Korean Jindo Dog Research Center, and Korean Gyeongju Dong Gyeong Dog Association from May to November 2017. Blood was collected from the cephalic or jugular vein, placed in a 0.5ml tube containing ethylenediamine tetra-acetic acid as an anticoagulant, and shipped to the laboratory. Blood tubes were stored at 4°C for <6 days before analysis. The DEA 1 was determined using a commercial immunochromatography (Quick Test DEA 1.1, Alvedia, Lyon, France) according to the manufacturer's instructions.

Results: A total of 332 blood samples of small breed dogs and two 223 blood samples of Korean native dogs (Jindo dog and Gyeongju Dong Gyeong Dog) were evaluated using immunochromatography. 76.58% dogs tested DEA 1-positive and 23.42% dogs tested DEA 1 negative. As a result for each breed, 56.38% of Maltese dogs tested positive and 43.62% tested negative, 63.16% of Poodle were positive and 36.84% dogs were negative. For Shih Tzu, 44.44% dogs were positive and 55.56% dogs were negative. In Pomeranian, 74.29% dogs were appeared to be DEA 1 positive and 25.71% dogs were negative. In Mongrel, 66.67% were positive and 33.33% were negative. In Yorkshire Terrier, 52% were tested positive and 48% tested negative. Miniature Schnauzers and two species of native dogs (Jindo dog and Gyeongju Dong Gyeong Dog) had significantly higher prevalence of DEA 1 positive (100%, 97.84%, and 97.62%) than other small breed dogs.

Conclusion: The DEA1 positive rate of two kinds of native dogs, Jindo dog and Gyeongju Dong Gyeong Dog, were higher than the other domestic canine breeds except Miniature Schnauzers in this study. These findings can be useful to refer for selecting a blood donor. For reducing the transfusion reaction, blood typing and cross-matching test would be required.

Keywords: erythrocyte, antigen, dog

P.CT1.07 - EMBOLIZATION OF A CANINE BLEEDING PROSTATIC TUMOUR
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Background: Prostatic gland diseases are frequently encountered in small animal’s clinic. The most common conditions affecting the canine prostate are: benign
prostatic hyperplasia, prostatitis, prostatic cyst and prostatic neoplasia. Treatments depends on the pathology and the patient condition, prostatic abnormalities are normally solved when the patient is sprayed. In this report, the main objective is to describe the embolization of a bleeding prostatic tumour, which overruns the vesical trigone. A previous urethral stenting was necessary to solve the urinary problems caused by the tumour obstruction.

Methods: Prostate embolization was developed by the injection of 300-500mm Ø microspheres (Merit Medical, BioSpheres Medical S.A. France) in the prostatic artery by fluoroscopic guidance. The prostatic artery was catheterized by a microcatheter (Cantanta 2.5Fr, Cook Medical, Bloomington.IN USA) and a micro guidewire (HiWire 0.018”x 150cm, Cook Medical, Bloomington.IN USA). Previously, using a 5Fr pigtail catheter, an angiography was performed from the abdominal aorta to obtain a vascular map. The prostatic artery is a branch from the pudendal artery, which born from the internal iliac artery. In this patient the left prostatic artery irrigates the 90% of the tumour, whereby it was decided just to embolize the left side. Microspheres were slowly injected until a small reflux was observed, then two microcoils of 3mm x 6cm (Interlock, Boston Scientific, Cork Ireland) were deployed at the beginning of the prostatic artery.

Results: Total embolization of the left prostatic artery was observed in the last angiography. Patient’s evolution was positive and bleeding stopped. However, 30 days after embolization, the patient had to be euthanized because multiple metastatic skin nodules appear and general condition of the dog got worse.

Conclusion: It is possible to perform a total embolization of the canine prostate. Interventional Radiology should be considered for non-surgical prostatic tumours, or another non-surgical pathology and bleeding control.

Keywords: Embolization, Prostatic tumour, Interventional radiology, Bleeding

P.CT1.08 - STENTING AND ANGIOPLASTY OF A LEFT ILIAC THROMBOTIC OCCLUSION IN A DOG - INTERVENTIONAL RADILOGY TREATMENT

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Background: Thrombosis in dogs is an uncommon condition that usually arises to a predisposing disease. Abnormalities in blood flow, injured endothelium and blood hypercoagulability are 3 general factors predisposing to thrombus formation. Some described treatments consist of Aspirin administration or intravenous infusion of tissue plasminogen activator, however, results are no sufficient to solve the pathology in all the patients. The aims of this report is to describe the interventional radiology management of a dog who suffered from aortic and left iliac thrombotic occlusion, who required endovascular intervention.

Methods: Diagnosis was performed by ultrasound examination. It revealed a thrombus in abdominal aorta at the level of iliac’s bifurcation, and no-blood-flow was detected in the left hind limb. Given the severity of the arterial obstruction, stenting the artery with the combination of Urokinase treatment was elected. The surgical procedure was performed by fluoroscopy guidance. A 6 Fr introducer sheat was placed at the right femoral artery using the Seldinger technique and different guidewires and catheters were required to get to the thrombus location. Iodinated contrast was administered for making the vascular map. Two self-expanding stents (Astron pulsar, Biotronik, Switzerland) were deployed. Both of them were totally expanded using a balloon (Passeo, Biotronik, Switzerland) to obtain the maximum expansion of the stent. Besides, 200.000 UI urokinase were administered as distal as possible to perform a complete recanalization.

Results: After the intervention, the limb temperature began to be recovered and the patient started to walk normally during the hospitalization days without any painful sign. Moreover, urinary problems that did not appear to be associated with the obstructive abnormality, began to improve the days after the surgery.

Conclusion: The positive results give us more evidences that the interventional radiology can be used to recanalise vascular obstructions without the need of aggressive surgeries.

Keywords: Thrombosis, angioplasty, stenting, Interventional radiology

P.CT2.16 - MOLECULAR CHARACTERIZATION OF MAIN RESPIRATORY DISEASES IN RESPIRATORY DISEASES COMPLEX IN BROILER FLOCKS IN NORTH OF IRAN, 2016

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Background: Amongst different prevalent poultry diseases, respiratory diseases with variable severities are the most common under intensive rearing system. Detection of the pathogens based on clinical signs and serologic tests is complicated for poultry veterinarians. In
this study, seven prevalent respiratory pathogens including: Newcastle disease virus (NDV), infectious bronchitis virus (IBV), avian influenza virus (AIV), Avian metapneumovirus (aMPV), Ornithobacterium rhinotracheale (ORT), Mycoplasma gallisepticum (MG) and Mycoplasma synoviae (MS) in broiler farms detected by polymerase chain reaction (PCR). Reverse transcription-PCR (RT-PCR) and their molecular characteristics were investigated.

Methods: Sampling: A total of 180 tracheal swabs were taken from 20 broiler farms in Mazandaran province during fall and winter, 2015-2016. After pooling, 60 swabs were prepared for PCR. All samples were taken during acute phase of respiratory disease. Genome extraction: for NDV, IBV, AIV and aMPV, RNA extracted by kit (Biogene, Korea). Then, cDNA was synthesized by Random Hexamer (RH) primer and First Strand cDNA synthesis kit (CinnaGen, Iran). For MG, MS and ORT, DNA extracted by boiling method, PCR: Target genes for NDV was fusion, for IBV was spike (HVR), for AIV were matrix and hemagglutinin and for aMPV was nucleocapsid that amplified in PCR. TaqMan probe, high resolution melting analysis (HRM), RT-PCR and type-specific RT-PCR were applied for strain identification of NDV, IBV, AIV and aMPV respectively. For MG, MS and ORT a fragment of 16SrRNA were amplified. Virulent strains of NDV and different genotypes of IB were sequenced and phylogenetic tree were designed by Mega 5 software.

Results: PCR products were 362, 396, 132 & 488, 255, 784, 362 & 488, 255 and 784 bp, respectively. NDV detected in 60% of flocks, IBV in 95% of flocks, AIV in 65% of flocks, aMPV in 65% of flocks. ORT in 55% of flocks, MG in 10% of flocks and MS in 20% of flocks.

Conclusion: Among the seven investigated pathogens in 20 broiler farms, IBV detected in the highest rate (95%), followed by AIV (65%), aMPV (65%), NDV (60%), ORT (55%), MS (20%) and MG (10%) respectively.

Keywords: Sequencing, Broiler, Iran, Respiratory Diseases Complex, PCR

P.CT3.01 - AIRWAYS ENDOSCOPIC FINDINGS AND CITOLOGICAL PROFILE OF THE BRONCOALVEOLAR LAVAGE IN WORKING HORSES DURING DRY SEASON

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Background: Endoscopy of the upper respiratory tract was found to be a useful technique for evaluating the cause of abnormal respiratory noise in most cases. Bronchoalveolar lavage (BAL) is a method for the recovery of respiratory secretions that line the peripheral airways and alveoli. Overall, BAL is considered very safe and sufficiently sensitive to detect inflammation at the cytologic level. Broncho alveolar lavage citology may be useful in the diagnosis of various lower respiratory tract disorders. The aim of this study was to characterize the changes in the respiratory tract through endoscopic examination of the airways and to evaluate the bronchoalveolar cytological profile of working horses in the dry period.

Methods: Six horses adults, clinically healthy, of the same farm and used for working on the farm were evaluated. Before de endoscopic examination and the BAL, all the horses were sedate with Xilazin 10% (1 mg/kg – IV). Endoscopic examination of the respiratory tract was performed with a flexible endoscope (1.70 meters length, 12 mm outside diameter), evaluating the upper and lower airways. The same veterinarian always performed the exam and the alterations were described in individual worksheets. For BAL, a bronchoalveolar lavage tube (3 meters length, 11 mm outside diameter) was used for infuse 200 ml of 0.09% sodium chlorid solution. From this volume only the samples whose recovery volume by the probe was about 40 to 60% were considered. The slides were prepared by cytocentrifugation (110G) for five minutes using Diff-Quick stain for reading an optical microscope with magnification of 1000x. The same technical counted 300 cells per slides. As the evaluation was performed in one day in the morning, in July month, an average temperature of 20.5 °C and one relative to the average of 50%, during the exams, in Andradina city, Sao Paulo state of Brazil.

Results: All animals presented alterations in endoscopy. The most frequently observed changes were tracheal secretion (83.33%). In two (2/6) horses observed mucoid tracheal secretion and in three (3/6) horses observed serous tracheal secretion. Another alterations observed were: carina edema in 50% (3/6), carina hyperreactive of 16.7% (1/6) and alterations in nasal shells like as hyperemic (1/6), swollen (1/6) and hyperreactive (2/6). In the BAL citology were found a predominance of macrophages (45.5±17.05%) and lymphocytes (32.22±11.66%), but neutrophils (3.00±5.61%) and eosinophils (0.44±1.09%) showed a slight increase.

Conclusion: We concluded that the changes found in the endoscopic findings should be related to the season of the year, since these animals were clinically healthy. The cytological profile of the BAL of horses may change due to the season of the year.

Keywords: equine, endoscopy, Respiratory, macrophages, eosinophil

P.CT3.02 - IMPROVEMENT OF HORSE WELFARE IN SERBIA IN ACCORDANCE WITH EUROPEAN UNION STANDARDS

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Background: According to the National Institute of Statistics from 2016, Serbia has a total of 15,000 horses, of which more than half (8000) are in the Region of Northern Serbia (Province of Vojvodina). Out of the total number, 6000 are mares and pregnant fillies. In general, horses in Serbia are kept on stud farms or on individual private
farms. Earlier, there was a lack of legal framework regarding the conditions for keeping the animals, especially horses. If we look at the legislation in Serbia, in addition to the Law on Animal Welfare ("Official Gazette of the R. Serbia" No. 41/2009), there is also the most recent Regulation on Registration and Approval of Facilities for Breeding, Holding and Traffic of Animals ("Official Gazette of the R. Serbia" No. 36/2017). In August 2017, the Recommendations for horse keeping were published by Veterinary Directorate, which are in accordance to the EU legislation, and this represents a significant improvement over the past few years.

Methods: In Serbia, despite the existence of the Law on Animal Welfare, there is still no systematic control of animal welfare standards, as well as no implementation of the national regulations, especially when dealing in horse welfare. We will illustrate this on some characteristic examples from veterinary practice.

Results: The welfare standards especially include sport horses, but despite of this there is still high percentage of doping in horses in Serbia - doping controls on horse racing and competitions have been implemented since 1983, with the percentage of positive samples ranging between 5 and 10% year after year. When we look at the domestic horses from the genetic resource protection program, for which owners receive annual subsidies from the state, we see that there is a large number of malnourished horses. For example, in one herd of 30 horses, the BCS (Body Condition Score) was less than 3 in all 30 horses, on a scale of 1 to 9. With starvation, a high intensity of infection with parasites was also determined, with no response from the competent authorities. Another example of horse welfare violation can often be seen in the forests where horses are used to extract wood - in addition to being exposed to excessive loads and frequent injuries and deaths, owners often organize some kind of horse racing with excessive loads, in which many animals suffer or even die. As horses are no longer used for agricultural work on private farms, they are often fed large amounts of food and are not having enough daily exercise, which leads to an obesity, primarily in lipizzaners, in which we can often see typical symptoms of metabolic syndrome.

Conclusion: If we compare the Regulation in European Union countries, there are certain differences in relation to our regulations. In Serbia, we only have recommendations, which are optional, without any penalties. However, we believe that in addition to the appropriate legal penalties, it is necessary to educate the horse owners/holders but also some veterinarians about the basic principles of protection and welfare.

P.CT3.04 – HEART RATE VARIABILITY IN HORSES WITH ACUTE GASTROINTESTINAL DISEASE

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Background: Analysis of heart rate variability (HRV) is a noninvasive tool to evaluate the sympathovagal balance of the autonomic nervous System (ANS). Reduced HRV reflects poor cardiovascular health and may be due to changes in the tone of both branches of ANS, or primary cardiac disease. The objective of this study was to describe HRV parameters in horses that were referred to the hospital with abdominal pain.

Methods: Upon admission, HRV was recorded with an automatic RR-detector to calculate the standard deviation of the R-R intervals (SDRR) and the root mean square of successive differences of the R-R intervals (RMSSD). Twenty horses referred for acute colic syndrome were included in the study (age 1–27 years). Drugs administered before and during the admission were recorded. According to the diagnosis horses were divided into 3 groups: obstructive, ischemic and inflammatory colic. According to the treatment and outcome horses were divided into: medical versus surgical, and survivors versus non-survivors.

Results: Although the mean heart rate (HR) was not different between groups, the SDRR was lower in the ischemic group (mean±standard deviation: 39.2±10.9ms) compared with the obstructive (134.4±74.5 ms) and the inflammatory (56.9±37.0ms) groups. The RMSSD showed high variability in the obstructive group and a higher average (103.8±55.1ms) in comparison with those in the ischemic (28.7±27.6ms) and inflammatory (24.8±11.4ms) groups. Similarly, SDRR was higher in horses treated medically (123.2±79.3ms) compared with those requiring surgery (54.1±29.7ms). Survivors had higher SDRR (100.5±72.8ms) and RMSSD (72.6±57.8ms) compared with non-survivors (44.8±21.5ms; 22.8±15.0ms, respectively).

Conclusion: Greater HRV is observed in horses with obstructive lesions, medical treatment and favorable outcome. HRV is a rapid non-invasive tool and in future studies may show a prognostic value in relation to diagnostic group, treatment or outcome.

P.PHT1.06 – GEOGRAPHICAL DISTRIBUTION AND IDENTIFICATION OF DISCRETE TYPIFICATION UNITS OF TRYPANOSOMA CRUZI IN TRIATOMINS

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Background: Chagas disease is a zoonosis caused by Trypanosoma cruzi (T. cruzi), a flagellated hemoprotozoan belonging to the order Kinetoplastida, family Trypanosomatidae, transmitted to susceptible vertebrates by haematophagous hemiptera of the subfamily Triatominae. The transmission mechanism is for a vector, hemiptera (bed bugs), of the Triatominae Subfamily (with hematophagous feeding). T. cruzi is distributed throughout the American continent from Argentina and Chile to the south of the United States of America. Currently, according to the second taxonomic consensus for T. cruzi approved during the XXV Meeting of Protozoology held in Buzios, Brazil, T. cruzi is subdivided into six discrete typing units (DTU) called Tcl, TcII, TcIII, TcIV, TcV and TcVI. On the other hand, the disease presents epidemiological risk factors associated with poverty and poor housing conditions, mainly in rural areas throughout the Latin American area, but in decades it has been observed more frequently in the...
Methods: A registry of 1321 samples of triatomines was carried out, 356 of them were positive to T. cruzi, obtained from 191 localities of 16 municipalities of the Sanitary Jurisdictions: Telújico, Tenancingo and Valle de Bravo of the State of Mexico in which T. cruzi was identified in the feces of the triatomines. The identification of T. cruzi was made by optical microscopy and PCR, performing the amplification of the intergenic region of the mini exon gene in samples of triatomines collected from intradomiciliary and peridomiciliary in municipalities of the south of the State of Mexico, Mexico. The final product was analyzed by electrophoresis in a 3.0% agarose gel. To obtain the geographical distribution of T. cruzi, the location of the town where the triatomine was captured was georeferenced. The potential distribution was estimated using the maximum entropy algorithm (MaxEnt), application interface within the Geographical Information System Idrisi Selva.

Results: Three species were found: Meccus pallidipennis, Triatoma dimidiata and Triatoma barberi. The most extensive distribution in the State of Mexico was presented by M. pallidipennis, followed by T. dimidiata, with positivity in both species above 2000 m above sea level. In samples positive for Trypanosoma cruzi, the Discrete Typing Unit (DTU) was identified. 30.24% (49/162) showed a band of 350 bp corresponding to Tcl; subsequently, 19 positive samples were selected for Tcl and were sequenced with 15 final Tcl samples, 3 carrier samples of two haplotypes (TcIa + TcId) and one sample as proposal to two new Tcl and TcG haplotypes. Haplotypes coincide in the mutation at position number 27 (T/C and T/A, respectively). In the populations of triatomines, the entomological indices of dispersion (7.1%), infestation (33.3%), colonization (16.6%), natural infection (26.9%), density (0.67%) and overcrowding (2.01%) were identified.

Conclusion: The adaptation of triatomines to human habitation, as well as entomological indicators, added to the prevalence of T. cruzi, allow establishing that the south of the State of Mexico is an area of high risk of transmission of Chagas disease. Until this study there was no data referring to carriers of mixed haplotypes.

P.PHT1.09 – COXIELLA BURNETII DNA IN MILK AND PHASE-SPECIFIC SEROLOGICAL RESPONSE RELATED BY AGE IN DAIRY COWS – PRELIMINARY RESULTS

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Background: In dairy cows shedding of Coxiella (C.) burnetii in milk can be persistent or sporadic to absent. Persistent heavy shedder cows are mostly persistently highly-seropositive. Serological response due to C. burnetii antigenic phase demonstrates acute or chronic infection (serological response to phase II (PHI) or phase I (PHI) antigen, respectively). Sero-prevalence increases by increasing of animal’s age. The aim of this study was to detect is there relation between burden of C. burnetii DNA in milk, phase-specific serological response and animal’s age. This is the first study for detection of burden of C. burnetii DNA in milk and phase-specific serological response in dairy cows in Latvia.

Methods: In this study, the milk and sera samples of 34 dairy cows belonging to 5 herds with previous history of C. burnetii infection were collected from different parishes in Latvia in July and August 2017 and tested in August and September. As previous history of infection was evidence of C. burnetii DNA in aborted fetuses in 2017. Milk samples were tested by detection of C. burnetii DNA by real-time PCR amplification using “ADIAVET™ COX REALTIME” (ADIAGENE). Sera were tested by “VetLine Coxiella Phase 1 and Phase 2 ELISA” (NOVATEC). Assessment of milk and sera results obtained was performed for eight age-groups.

Results: Three cows (9%) demonstrated shedding of C. burnetii (DNA+) in milk in three age groups. Six cows (18%) demonstrated positive serological response to PHI (PHI+) in four age groups. Three cows (9%) demonstrated questionable serological response to PHI (PHI–) in two age groups (Table 1). The highest seroprevalence to PHI (two PHI+ and two PHI– cows, respectively) was observed in age-group 4.1-5.0 years old while in age-groups <2.0; 6.1-7.0 and >8.0 was not observed serological response neither shedding of C. burnetii DNA in milk. None of cows demonstrated serological response to PHI.

Table 1

<table>
<thead>
<tr>
<th>Age-group (years)</th>
<th>Number of animals demonstrating shedding of C. burnetii DNA in milk (DNA+), positive (PHI+) and questionable (PHI–) serological response to C. burnetii phase I antigen, and total number of animals in age-groups</th>
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<tr>
<td>&lt;2.0</td>
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<td>2.0-2.5</td>
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<td>7.1-8.0</td>
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As proposed to two new TcIa and TcG haplotypes.

Estimated burden of C. burnetii DNA in milk was 4.5*10^1; 8.9*10^1 and 9.0*10^1 copies of DNA per mL. Serological response in these cows varied from positive to questionable to negative to PHI in accordance with animal’s age-group (in 2.1-3.0; 4.1-5.0 and 7.1-8.0 years old, respectively).

Conclusion: Study demonstrated that in DNA+ cows, serological response to PHI decreased by increasing of animal’s age. This tendency was independent of C. burnetii DNA burden in milk. The number of observations in the present study is not large enough to permit definitive conclusions about the relation between C. burnetii DNA burden in milk, phase-specific serological response and animal’s age. The study will be continued.

Keywords: shedding, Phase I, Phase II, Coxiella burnetii, dairy cows

USA, Canada, European countries and some Western Pacific.
P.PHTL.10 - SURVEY ON EFFECTS OF CINNAMON ESSENTIAL OIL AND NISIN ON THE GROWTH OF SALMONELLA TYPHIMURIUM IN MINCED CHICKEN MEAT DURING COLD STORAGE

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Background: essential oils of some plants and bacteriocins are natural antimicrobial agents for enhancing the durability and inhibition of pathogens in food products. Salmonella typhimurium is an important pathogenic agent that causes salmonellosis in humans. Meat and its products are important sources of S. typhimurium transmission to humans. In these research effects of cinnamon (Cinnamomum zeylanicum) oil, nisin and mixture of cinnamon oil and nisin (cinnamon oil-nisin) on the growth and survival of S. typhimurium in chicken minced meat during 10 days of storage at refrigerated temperature was studied

Methods: extraction of cinnamon essential oil, analyze the chemical composition of the cinnamon oil, determination the minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) of the cinnamon oil, nisin and cinnamon oil-nisin on S. typhimurium, preparation of the minced chicken meat containing S. typhimurium, various concentration of cinnamon oil (100, 200 and 400 ppm), nisin (100, 200 and 400 i.u/g), and cinnamon oil-nisin, counting of S. typhimurium, performance of standard plate count (SPC) and pH measurements on different storage days at refrigerator (zero, 4, 7 and 10) were the methods used in the study.

Results: the major constituents of cinnamon oil were cinnamic aldehyde (35.23%), -bergamotene (15.06%) and trans-cinnamyl acetate (12.08%). The MIC values of cinnamon oil, nisin and the cinnamon oil-nisin were 1.6 mg/ml, 100 i.u/ml and 0.8 mg/ml-50 i.u/ml respectively. Determination of FIC (Fractional Inhibitory Concentration) index showed that the cinnamon oil-nisin inhibit the S. typhimurium additively. The cinnamon oil-nisin was the most effective treatment in reducing of S. typhimurium count and SPC in minced meat. The pH values showed no significant differences among the tested treatments. Also among the tested various concentrations of treatments, the mixture of 400 ppm cinnamon oil and 400 i.u/g nisin was the most effective concentration in reducing S. typhimurium count and SPC.

Conclusion: From the results it can be concluded that the cinnamon oil-nisin was the most effective treatment in decreasing of S. typhimurium count and SPC. Therefore the cinnamon oil combination with nisin to enhance durability and inhibition of pathogens in minced meat is recommended.

Keywords: Cinnamon essential oil, nisin, Salmonella typhimurium, minced chicken meat

P.PHTL.11 - APPROACH OF REGION OF SARDINIA (ITALY) IN THE RISK-BASED CATEGORIZATION OF ESTABLISHMENTS FOR OFFICIAL VETERINARIAN CONTROLS

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Background: Regulations (EC) 882/20004 and 1069/2009 lay down that official controls are carried out regularly, on a risk basis and with appropriate frequency, taking account of identified risks associated with food, feed and animal-by-products, their use, any activity that may influence food and feed chain safety, past record of animal-by-products or feed or food business operators as regards compliance with respective law. Regulation (EU) 2017/625, in force from 14/12/2019, lays down that official controls are performed by competent authorities on all operators regularly, on a risk basis and with appropriate frequency. According to articles 18, 19 and 20, the Commission, by means of implementing acts, may lay down rules regarding uniform minimum frequency of official controls having regard to the hazards and risks related to food, feed and animal-by-product. The Sardinia Regional Government adopted a multi-annual regional control plan (MARCP) 2015-2018 according to EU law objectives pursuing a high level of human and animal health protection as well as animal welfare along agri-food chain where public veterinary health plays a critical role in the One-Health approach operating in the interface of animals and humans health, and even the environment.

Methods: The mentioned Regional provision disposed the Public Veterinary Health and Food Safety Service (PVH-FS) to implement the MARCP 2015-2018 by adopting multi-annual regional control programs in order to achieve EU public health objectives. In the perspective to set next MARCP 2019-2022, PVH-FS started to consult stakeholders involved with food safety during 2015-2016. Eventually, a new risk-based approach to official control was put in place and assessed during 2017.

Results: Between December 2016 and January 2017, the PVH-FS approved three acts establishing operative instructions for local competent authorities to categorize on a risk basis food and feed business and animal-by-product economic operators’ establishments. Official controls on such operators were consequently re-organized setting up minimum uniform frequencies on the basis of the “risk factors”, “assessment criteria”, “scores” and different “weights” summarized in table 1.

Conclusion: Efficacy of official controls carried out by competent authority along the agri-food chain, relies mainly on a risk-based approach, appropriateness of methods and techniques for official controls, and effective control of risk factors. On such grounds, it is necessary to focus veterinary professional activities within competent authorities according to an evidence-based approach. In this frame, awareness of duties and professional skills of official veterinarians should be enhanced in order to guarantee efficacy and appropriateness of official controls as important veterinary professional matter.

Keywords: risk-based categorization, official control, Public Veterinary Heath
**P.PHT1.12 - THE SUCCESSFUL ACTIVITY OF THE VETERINARY STATUTORY BODY IS A GLOBAL PUBLIC WELFARE**

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**Background:** Kyrgyzstan is a mountainous country, most of its territory 93% covered by mountains and foothills. The development of the country’s livestock sector is connected with natural climatic landscape. Almost 80% of the population engaged in livestock breeding and produce safe natural food. Taking into account the international standards the development of the veterinary system is very important for us.

**Methods:** The Veterinary Statutory Body of the Kyrgyz Republic (VSB KR) – independent professional body which is responsible for regulation the activities of veterinarians and para-veterinarian specialists. VSB KR is a new organization in the post-Soviet countries. Our organization conducts series of trainings and seminars for private veterinarians of Kyrgyzstan to train them in new methods of combating dangerous zoonoses. We teach veterinarians to be responsible for not only the health of humans and animals, but also for the whole ecosystem.

**Results:** VSB KR was established in 2011 and during this period gained considerable experience in conducting trainings for veterinarians on the development of training modules in the field of animal health. There are 2446 veterinarians in the Registry of VSB KR. Since 2014, the VSB KR became a part of the veterinary system of Kyrgyzstan.

**Conclusion:** Kyrgyzstan is a developing agricultural country. In the process of globalization and integration we still have to do a lot for the world veterinary community. As a part of the world veterinary community we need their support and understanding. Veterinarians are responsible for the successful implementation of policies in the field of animal breeding, aquaculture and food safety, as well as for effective prevention and control of biological disasters, we must be well prepared, undergo continuous professional development and interact not only to animal health and welfare, but also to veterinary public health. Our main priority is cooperation for the development of the veterinary system.

**Keyword:** Keywords: VSB KR, Kyrgyzstan, Veterinary system

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**P.PHT1.13 - NOVEL SINGLE NUCLEOTIDE POLYMORPHISMS OF FSHR GENE AND THEIR ASSOCIATION WITH LITTER SIZE IN EGYPTIAN GOATS**

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**Background:** The Follicle Stimulating Hormone (FSH) is a pituitary gonadotropin that plays an indispensable regulatory key role in gonadal function and follicle development in mammals via FSH-receptor (FSHR) mediated pathway. This study used to identify the genetic polymorphism at two loci (5' regulatory region and exon 10) in FSHR gene among different breeds of Egyptian goat (Baladi, Parqi, Damascus and Zaraibi goats).

**Methods:** Genomic DNA isolated from blood samples which taken from four different Egyptian goat breeds then genotyping for two loci in FSHR gene by using PCR-SSCP technique. PCR products of different genotypes were separated and recovered then sequenced in both directions using an ABI3730xl DNA automatic sequencer (GATC Company, Germany) and the sequences were analyzed using multiple sequence alignment with hierarchical clustering and Blast in NCBI (National Center of Biotechnology Information).

**Results:** The PCR-SSCP technique proved the presence of three genotypes (AA, BB and AB) in Parqi and Damascus native breeds and two genotypes (AA and BB) in Baladi goats. The Zaraibi breed, however, had only AA as dominant. Two SNPs were detected in the 5' regulatory region. The first detected SNP was G 343 T that replaces the polar electrophilic Gln with the basic highly nucleophilic His at 114 residue in AB genotype. The second SNP was A 368 T that resulted in deletion of nucleophilic basic Lys at residue 122 in BB genotype. AA genotype Baladi does showed a greater litter size than BB genotype in Parqi does. On the other hand, there is no significance difference between different genotypes in Damascus goat. The observed single genotype of Zaraibi goats may imply its conserved nature when compared with other breeds. Exon 10 of FSHR gene was non-polymorphic locus.

**Conclusion:** The obtained data afford a potential novel avenue to discriminate between native goat breeds using 5' regulatory region of FSHR as candidate genetic marker.
Keywords: exon10, polymorphism, FSHR, 5’ regulatory region

P.PHT1.14 - NATIONAL PLAN TO REDUCE VETERINARY DRUGS RESIDUES IN ANIMAL PRODUCTS FROM PEASANT FAMILY FARMERS OF CHILE

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Background: The use of veterinary drugs (VD) is a common practice to control diseases in animal husbandry. This includes correct and adequate use but also overuse and misuse, with the associated risks of having residues over the maximum residue levels (MRLs) in human consumption products. The residues of VD can be reduced through the application of good management practices (GMP), education, awareness building and working with farmers, veterinary control authorities and other technical assistance providers. To face this challenge it’s critical adequate risks management to ensure good practices in the use of VD. Also search for alternative treatments, prevention, biosecurity and health promotion practices play an important role to raise healthy animals and deliver safe and quality food for the population.

Methods: A base line was performed with 3 components: GMP adoption index (GMPAI), chemical residues analysis (CRA) of products and risk analysis (RA). This work was done in 200 peasant family farmers of 8 regions of Chile from Valparaíso to Los Lagos including producers of milk, sheep meat and beekeepers. The GMPAI was calculated using a survey applied to farmers to find out the adoption of a set of GMP in adequate handle, use and store of VD. Samples were taken to the products of the farmers to perform laboratory analysis to detect residues of antimicrobials, pesticides and antiparasitics. The RA was performed to determine the risk index of the different products used along production chain. A protocol was design to increase GMPAI in small farmers and so to reduce the risk of chemical contamination of food and the populations’ risk when consuming animal products. This protocol includes training of public technical assistant agents that work directly with the small farmers, the development of guidelines on the correct use of VD and direct training with farmers using a methodology called “communities of practice” to increase knowledge generation and exchange.

Results: The results of GMPAI meaning percentage of farmers adopting each GMP showed relative high results with near 60% of the practices adopted by the farmers and similar results for the percentage of farmers adopting each of the GMP. Most of the samples taken were found compliant or with residues below the maximum residues levels, with the exception of two samples of milk that surpasses tetracyclines and aminoglycosides MRLs. RA gave the risk index on the different VD used along the production chain showing highest indexes in lactation in dairy producers, herd selection in sheep meat producers and core formation on beekeepers.

Conclusion: Base line results showed important gaps to close when trying to reduce the risks of having VD residues in family farmers’ products and so the protocols where design considering this gaps and particularities of this type of producers. The application of the protocols and trainings showed wide interest both from technical assistants and farmers, and gives good perspectives to increase the standards of the products produced by family farmers which are most of them destined to national consumption and to public school supply.

Keywords: veterinary drugs, peasant family farmers, chemical contamination of food, antimicrobial residues, good farming practices

P.PHT1.15 - INVESTIGATION ON BACTERIAL CONTAMINATION AND SANITATION OF SHEEP CARCASSES IN SLAUGHTERHOUSES

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Background: About 1,000 sheep are slaughtered every year in slaughterhouses under our jurisdiction. So far, we have not carried out sanitary confirmation by wiping off carcasses of sheep. In Japan, compared with cattle and swine, there is hardly anything done about the wiping of sheep carcasses. Therefore, we investigated bacterial contamination by wiping off the sheep carcasses. Furthermore, we investigated causes of contamination of sheep carcasses and more sanitary methods of slaughter.

Methods: 1) Investigation of bacterial contamination of sheep carcasses: For the purpose of investigating the contamination situation of sheep carcasses at the start of survey, 50 sheep carcasses were slaughtered in February and March 2017 and a wiping inspection of carcasses chest and buttocks was conducted by official method. 2) Hygiene education: On April 20, 2017, we asked 32 workers at slaughterhouses, and hygiene education was conducted on sanitary slaughter methods of sheep. 3) Verification of effect: To verify the effect of hygiene education, we again wiped the carcasses of 50 sheep that were slaughtered after hygiene education as in 1) above.

Results: The average value of standard plate count before sanitary education was chest 80.4 cfu/cm², buttock 108.9 cfu/cm². Compared with the wiping data of swine carcasses using the same line in the slaughterhouse, these values were high. The values for sheep were about 2 times higher in the chest and about 4 times higher in the buttocks. After hygiene education, we carried out a wiping inspection of carcasses again, and the chest decreased to 56.7cfu/cm², buttocks decreased to 53.8cfu/cm², and significant improvement was observed particularly in the buttocks (P value <0.05).

Conclusion: We speculate that sheep have a long coat, in regards to factors that tend to have a high average value of standard plate count of sheep carcasses compared to swine carcasses. For this reason, carcasses, fingers, instruments, etc. are considered to be susceptible to contamination from the coat. As a result of conducting sanitation education focusing on pollution from the coat, improvement of both the chest and buttocks was also seen, so the coat is considered likely to be an important pollution factor of the carcasses. However, even after hygiene education, sheep carcasses showed a higher standard plate count whole swine carcasses had no change, therefore it is implied that it is a technically extremely difficult task to peel the...
sheep carcasses from the coat without contamination and the possibility that other carcasses factors may exist. We will continue to review the processing process, pursue pollution factors and strive to supply sanitary mutton.

**Keywords:** sheep carcasses, slaughterhouses, mutton, public health, sanitary methods of slaughter
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