Proceedings of the 33rd World Small Animal Veterinary Congress

Dublin, Ireland - 2008

Next WSAVA Congress:

Reprinted in IVIS with the permission of the Congress Organizers


**EVALUATION OF EFFICACY OF PROMERIS DUO® AGAINST LICE (TRICHODECTES CANIS) IN DOGS**

Larry D Parker BSc (Hons), Columba Moran, Douglas Rugg
Fort Dodge Animal Health, Flanders Road, Hedge End, Southampton SO30 4QH, UK

The objective of the study was to evaluate the efficacy of ProMeris Duo® compared to Frontline® Spot-On Dog and an untreated control against lice (Trichodectes canis) infestations in dogs.

Twenty-four animals with a lice burden of at least 10 were randomised into three groups of eight based on pre-treatment lice counts. Group 1 received no treatment and served as the untreated control group; Group 2 animals were treated with Frontline Spot-on Dog (CP) at the minimum recommended rate of 0.067 ml/kg bodyweight, once on Day 0; and Group 3 animals were treated with ProMeris Duo (IVP) at the minimum recommended dose rate of 0.133 ml/kg bodyweight, once on Day 0. Both the CP and IVP were applied as a single spot on the skin of the dog between the shoulder blades, except in two animals in the IVP group where the site of spot-on application had signs of skin infection: in each case the animal was dosed on the cranial side of the lesion along the dorsal midline.

Lice counts (the total number of lice counted in eight locations) were conducted on Days -7 and -1 prior to treatment and on Days 2, 7, 14, 21, 28 and 35 post-treatment. Efficacy was assessed based on a comparison of the geometric mean lice counts in the CP and IVP groups with that of the untreated control group at each time point.

Lice counts decreased to zero in two of the eight untreated control animals over the course of the study, but there were at least six infested animals at each time point. The percentage efficacy of ProMeris Duo on Days 2, 7, 14, 21, 28 and 35, respectively was 70.5, 97.3, 100, 100, 100 and 100. The corresponding figures for the CP were 87.9, 100, 100, 100, 99.7 and 100. At all post-treatment time points, animals treated with the CP or IVP had significantly (P<0.05) fewer lice than the untreated controls; however, there were no significant differences between the CP and IVP groups.

Both products effectively controlled lice infestation on dogs after treatment and were well tolerated during the course of the study.

---

**EFFICACY OF PROMERIS® DUO SPOT ON IN DOGS ARTIFICIALLY INFESTED WITH IXODES RICINUS TICKS**

Klaus Hellmann Dr.med.Vet, Fachtierarzt für Pharmakologie und Toxikologie, DipECVPT; Birgit Brunner1, Sonja Wolken1, Thomas Schnieder1, Douglas Rugg1
1: Klifovet AG, Geyerspergerstr.27, D-80689 Munich, Germany, 2: Institute for Parasitology, Veterinary University of Hannover, Hannover, Germany, 3: Fort Dodge Animal Health, Princeton, NJ, USA

**Introduction**

*Ixodes ricinus* is the most prevalent tick species in dogs and cats in the northern parts of Europe. ProMeris® Duo is a new spot-on ectoparasitic product containing metaflumizone/amitraz that is indicated for the treatment of infestation with various tick species, including *Ixodes ricinus*, and fleas. In order to evaluate the efficacy of treatment of an existing tick infestation as compared to permethrin (ExSpot®, SPAH), a controlled, randomised and blinded study was conducted under laboratory conditions.

**Methods**

In a blinded parallel design study, 16 ten to eleven months old dogs (9 male, 7 female) were artificially infested with 25 female and 25 male viable *Ixodes ricinus* ticks each on Day -2. Based on tick counts on Day -1 and weight, the dogs were randomly allocated to treatment with either ProMeris® Spot-on (minimum 20 mg/kg metaflumizone/20 mg/kg amitraz) or permethrin Spot-on in a 1:1 ratio, using the commercial German products according to SPC recommendations. Subsequently, tick counts were done at 6, 24 and 48 hours post treatment. Per cent reduction relative to Day -1 counts and mean female viable tick counts were compared between treatments using SAS 9.3 Software, ANCOVA.

**Results**

There were no treatment-related adverse experiences. At 6 hours post treatment, no major effects of treatments were observed in either groups. Mean viable female tick counts were less in ProMeris® Duo treated dogs compared to permethrin animals at 24, but counts were not significantly different (p > 0.05). The counts for dogs treated with ProMeris® Duo were significantly lower than the dogs receiving the permethrin treatment at 48 hours (p=0.0156). At 24 hours, efficacy for the ProMeris Duo dogs was 28.7% and 16.4% for permethrin. By 48 hours after treatment, ProMeris® Duo reduced 75 % of the ticks, while in the permethrin group still more than 66% of the ticks were viable (p=0.027).

---

Proceedings of the 33rd World Small Animal Veterinary Congress 2008 - Dublin, Ireland
Conclusion
ProMeris® Duo was efficacious in the reduction of *Ixodes ricinus* ticks in dogs. After 48 hours of treatment, ProMeris® Duo was superior to the treatment with the permethrin spot-on product.

**FIELD EVALUATION OF THE EFFICACY OF THE EMODEPSIDE/PRAZIQUANTEL SPOT ON SOLUTION FOR THE CONTROL OF *TRICHURIS CAMPANULA* IN NATURALLY INFECTED DOMESTIC CATS**

Gabriela Pérez Tort, Med Vet1; Maria Fernanda Iglesias1; Olegaro Prieto1; Julieta Mallea1; Martin Basanta1  
1: Dept of Parasitology and Parasitic Diseases, Veterinary School, University of Buenos Aires, Jose p Varela 3152, CP 1417 Argentina, 2: Director Técnico de Bayer SA, División Sanidad Animal, Ricardo Gutiérrez 3652, B1605EHD, Munro, Buenos Aires, Argentina, 3: Virreyes Veterinary Hospital, Acceso Norte 2502 San Fernando, Pcia. de Buenos Aires, Argentina

Companion animal parasite control is an important aspect for animal and public health. Frequent deworming with broad spectrum anthelmintics has nowadays become a common veterinary practice. However, cat owners deworm less than dog owners, due to the difficulty of cat oral administration. Topical treatment is more advisable and less stressing for the cat and the owner. Bayer has developed a product that combines praziquantel plus a novel nematocide: emodepside. Emodedpside and praziquantel spot-on formulation was evaluated in cats naturally infested with *Toxocara cati*, *Dipylidium caninum* and *Trichuris campanula*, in Great Buenos Aires North area. Privately owned cats over 8 weeks of age, of any sex, with or without signs, infested with at least one of the following parasitic genera: *Toxocara*, *Dipylidium* or *Trichuris*, were included in this trial. *Trichuris campanula*, a rare parasite in Europe and United States, has been reported in Great Buenos Aires, Argentina, where prevalence is 4.5%. The cats had not received any anthelmintic treatment the month previous to the study.

**Cats were allocated to two groups:**
- Group A: 36 cats, 17 positive to *Toxocara*, 11 to *Dipylidium* and *Toxocara*, 1 to *Trichuris* and 7 to *Trichuris* and *Dipylidium*.
- Group B: 35 cats, were 15 cats infected with *Toxocara*, 14 with *Trichuris*, 5 with *Dipylidium*, 1 with *Toxocara* and *Dipylidium*.

All cats were kept in their owner’s household environment during the experimental period. Animals’ parasitic status was evaluated by means of faecal flotation and observation of perineal region to detect *Dipylidium* proglottids. A quantitative method was performed on positive samples and egg per gram was obtained. Group A received a single treatment with emodepside, (3 to 15 mg/kg) / praziquantel (12 to 60 mg/kg), spot on formulation. Group B received a pyrantel (575 mg/kg) / praziquantel (5 mg/kg), single oral treatment. Faecal samples were taken on day 7 and 45 after treatment. Group A, emodepside/praziquantel formulation showed efficacy of emodepside/praziquantel combination used for the Group B was unsatisfactory. This is the first report showing efficacy of emodepside/praziquantel against *T. campanula* in cats.

**A MULTI-CENTRE CLINICAL TRIAL EVALUATING THE EFFICACY AND SAFETY OF ALFAXAN® ADMINISTERED TO BITCHES FOR INDUCTION OF ANAESTHESIA PRIOR TO CAESAREAN SECTION**

Steven Metcalfe BSc BVMS(Hons) MSc MACVSc1, Amanda Hulands-Nave2, Michael Bell2, Christine Kidd2, Kirby Pasloske3, Brad O’Hagan3  
1: Applecross Veterinary Hospital, 9 Sleat Road, Applecross, WA 6153, Australia, 2: Bellarine Animal Practice, Newcomb, Victoria, Australia, 3: Craigieburn Veterinary Hospital, Craigieburn, Victoria, Australia, 4: Manly Road Veterinary Hospital, Manly West, Qld, Australia, 5: Jurox Pty Ltd, Rutherford, NSW, Australia

Alfaxan® (Jurox Pty Ltd, Rutherford, NSW) is an injectable formulation of the neuroactive steroid anaesthetic drug alfaxalone (10 mg/mL). This investigation was designed to evaluate the efficacy and safety of Alfaxan® for induction of bitches prior to Caesarean section. The study was a prospective, multi-centre, positive-controlled, randomised efficacy study with two parallel groups: 1) Alfaxan® and 2) Rapinovet X® (propofol 10 mg/mL).

Animal Ethics Committee approval was obtained (No. JAEC/05/012). A total of 74 bitches were induced intravenously to anaesthesia with 48 and 26 receiving Alfaxan® and Rapinovet X®, respectively. No premedicants were administered. All bitches were intubated and maintained on isoflurane and oxygen. Parameters were assessed prior to, during and after anaesthesia. The survival
and vigour of pups delivered by Caesarean were also assessed. Parametric descriptive statistics, Student’s T-tests, and linear or logistic regression were performed in Microsoft Excel or SAS for Windows, version 8.02 (SAS Institute Inc, Cary, NC, USA). The average induction dose of Alfaxan® was 1.9 mg/kg body weight. Cardiovascular and respiratory parameters were well maintained during the induction, maintenance and recovery periods for both treatment groups. Immediate post induction apnoea occurred in 15% and 25% of Alfaxan® and Rapinovet X® cases, respectively. Anaesthetic induction was scored as: 1 (unacceptable), 2 (acceptable) or 3 (excellent). The average quality of anaesthesia was numerically superior during induction and anaesthesia with Alfaxan® compared to Rapinovet X®. Ninety-eight (98) and 81% of bitches scored a top score of 3 for induction and anaesthesia with Alfaxan®, respectively, while only 89 and 65% scored a 3 for the same parameters with Rapinovet X®. Anaesthetic recovery was scored as: 1 (poor), 2 (fair), 3 (good) and, 4 (excellent). Average scores for recovery were similar between the two treatment groups. No bitch fatalities were observed in this study. There were no statistically significant differences between treatment groups for the puppy variables; however, puppy vigour scores for Alfaxan® were numerically superior versus Rapinovet X®. Puppies born by Caesarean section to bitches having been administered Alfaxan® or Rapinovet X® had similar survival rates 24 hours after birth (i.e. 97 and 98%, respectively). This study confirms the safety and efficacy of Alfaxan® for the purpose of anaesthetic induction for Caesarean section in the bitch.

EVALUATION OF DIFFERENT LAPAROSCOPIC STERILIZATION TECHNIQUES IN CANINE BIRTH CONTROL PROGRAMME
Swapan Kumar Maiti PhD, Avijit Dutta, Indian Veterinary Research Institute, Izatnagar, Bareilly-243 122 (UP), India

High demographic urban and industrial areas in developing countries like India require an effective animal birth control programme which can overcome the problem of hospitalization, postoperative complication and reduce overall cost of operation. Three laparoscopic sterilization techniques namely laparoscopic bilateral oophorectomy (Group-I = 20 animals), laparoscopic ovariohysterectomy by electrocautery and endoclipping (Group-II = 45 animals) and laparoscopic ovariohysterectomy by only electrocautery (Group III = 20 animals) were evaluated in 85 stray dogs under animal birth control programme. All the animals were placed on Trendelenburg position and peritoneal insufflations by CO₂ (2 lit min⁻¹) at 10 mm Hg pressure gradient was achieved under atropine-xylazine-ketamine anaesthesia. Three ports were needed to carry out the operation. One was 5 mm umbilical and other two were 10 mm paramedian ports. During laparoscopic bilateral oophorectomy, 10 mm clip applicator preloaded with titanium endoclip was inserted through 10 mm paramedian port to reach contra lateral ovary. Clips were applied at cranial ovarian attachment as well as utero-ovarian junction. In between the clips, the ovarian tissues were resected and coagulated with 60 W monopolar current with effective haemostasis and the resected ovarian tissues were removed through 10 mm port. During laparoscopic ovariohysterectomy, endoclips were applied around the cranial ovarian attachments and the uterine body, cranial to the cervix. Resection and cauteration were performed on mesometrium and uterine body leaving the clips portion in situ. Resected utero-ovarian structures were then removed from abdominal cavity through 10 mm paramedian port. In another group of laparoscopic ovariohysterectomy (Group-III), the operative procedure remained same, except the application of endoclip. Mild haemorrhages were observed from the resected uterine stumps during operation and that was more in group III than other two groups. However, subsequent application of electrocautery provided effective haemostasis in all animals. Other minute complications encountered were accidental thermal injury of urinary bladder in three animals of group I and large intestine in two animals of group III. However, these traumas remained ineffective on the patients. No immediate or delayed postoperative complications like port-site herniation, emphysema or stitch abscess were found in any group. Laparoscopic sterilization techniques were minimally invasive and provided early recovery without morbidity in dogs. Intraoperative and postoperative physiological and biochemical parameters were least affected in these animals. Laparoscopic ovariohysterectomy by endoclipping and electrocautery in dogs provided optimum haemostasis and effective removal of utero-ovarian structures and this technique applied successfully for mass sterilization/canine birth control programme.
**CANINE DYNAMIC OBSTRUCTION OF THE LEFT VENTRICULAR OUTFLOW TRACT - SPONTANEOUS RESOLUTION AND USE OF TDI TO ASSIST DIAGNOSIS AND THERAPEUTIC MONITORING**

Joao Loueiro DVM, CertVC, MRCVS; Sarah Smith¹, Sonja Fonfara, Simon Swift; Rachel James¹, Jo Dukes-McEwan¹,

1: Liverpool University Small Animal Teaching Hospital, Chester New Road, Neston, Wirral, CH64 7TE, UK,
2: The Scarsdale Veterinary Hospital, Derby, UK, 3 Nantwich Veterinary Hospital, Nantwich, Cheshire, UK

Dynamic left ventricular outflow tract obstruction (DLVOTO) is common in cats with hypertrophic obstructive cardiomyopathy but is rare in dogs. Diastolic dysfunction is expected to play a major role in the pathophysiology of this disease but due to the paucity of reported canine cases this remains speculative. This study aimed to evaluate the clinical features, echocardiographic findings and characterise the myocardial function, using standard 2D, M mode, Doppler echocardiography and pulsed wave tissue Doppler imaging (pw-TDI) of dogs with naturally occurring DLVOTO and to investigate the clinical outcome and response to therapy in these dogs. Five cases were identified. Two cases were retrospectively reviewed and three cases were prospectively evaluated. 3/5 dogs were terrier breeds. One dog had frequent syncope, but 4/5 were asymptomatic. All were normotensive and congenital heart disease was excluded. All had variable intensity left systolic heart murmur. Doppler echocardiography revealed concentric left ventricular hypertrophy (LVH), systolic anterior motion of the mitral valve and increased LV outflow velocities with scimitar shaped aortic Doppler flow profile in all cases. The syncopal patient also had significant dynamic right ventricular outflow tract obstruction. Pw-TDI interrogation of the interventricular septum revealed E’/A’ reversal in all but one patient. 3/5 received treatment with a β-adrenergic antagonist and 2/5 received no medication. Echocardiographic re-evaluation was performed in 4 patients showing regression of LVH and partial or total resolution of the DLVOTO in all patients. Improvement in diastolic function (normalisation of the reversed PW-TDI E’/A’ ratio) was seen in the treated group. One untreated dog showed normal echocardiographic values at 3 months. This patient showed the fastest improvement but had normal PW-TDI values on both initial and follow up evaluation. One untreated dog normalised after two years, and the two treated dogs achieved this within 6 months. The frequency of syncope was significantly reduced in the collapsing dog, but no repeat echo was possible. This study supports evidence for the possible self-limiting nature of the disease as spontaneous resolution is reported here in two cases. Despite this, treatment with a β-adrenergic antagonist appears to result in faster improvement. Presence of Pw-TDI abnormalities constitute further evidence for significant diastolic dysfunction associated with the hypertrophy. Analysis of diastolic function in cases of canine DLVOTO provides valuable information that can be used to add significant prognostic information, monitoring of disease progression and response to treatment.

**STUDY OF AETIOLOGY AND OUTCOME IN CATS PRESENTING WITH DYSPNOEA IN A REFERRAL POPULATION**

Simon Swift MA VetMB CertSAC MRCVS, Joao Loueiro, Sonja Fonfara, Rachel Burrow, Jo Dukes-McEwan,

Liverpool University Small Animal Teaching Hospital, Chester New Road, Neston, Wirral, CH64 7TE, UK

DYSPNOEA is a common presenting sign. No studies have examined the causes of dyspnoea, signalment or outcome. Here, the records of 90 dyspnoeic cats referred to Liverpool University Small Animal Teaching Hospital were retrospectively analysed. The data was extracted concerning their signalment, duration of clinical signs before referral, whether they were emergencies, respiratory rate on admission, length of stay, underlying aetiology and outcome. In this population, 58% were presented as emergencies and 60% of cats survived to discharge. Aetiology of dyspnoea was categorised into major groups. Thirty four cats had cardiac disease, 19 respiratory, 17 neoplastic, 7 infectious and 7 traumatic causes of dyspnoea. The remaining causes included: 3 developmental abnormalities, one tracheal foreign body, one iatrogenic pneumothorax and one unknown. The cardiac causes included 4 congenital heart disease, 2 congestive failure and 28 cats had a form of cardiomyopathy (CM): 12 cats with hypertrophic (HCM), 4 hypertrophic obstructive (HOCM), 8 unclassified (UCM), 2 restrictive (RCM) and one each of dilated cardiomyopathy and arrhythmogenic right ventricular cardiomyopathy. Dyspnoea was due to pulmonary oedema, confirmed radiographically in 8 HCM/HOCM cats. Pleural effusions were present in both RCM cats, 2 HCM and five UCM.
Troponin I to Assess Severity, Progression and Prognosis of Cardiac Diseases in Dogs
Sonja Fonfara Dr Med Vet, CertVC, Joao Loureiro, Simon Swift, Rachel James, Joanna Dukes-McEwan
1: Liverpool University Small Animal Teaching Hospital, Chester New Road, Neston, Wirral, CH64 7TE, UK
2: Nantwich Veterinary Hospital, Nantwich, Cheshire, UK

Cardiac troponin I (cTnI) is used in human and veterinary medicine as a specific and sensitive marker for myocardial injury. In human cardiac disease, cTnI is shown to have predictive value for mortality. cTnI belongs to the troponin complex. In myocardial injury, it is released into the circulation.

To investigate the use of cTnI to assess progression of disease and as a prognostic indicator, we reviewed the records of 125 dogs presenting for cardiac evaluation to the Small Animal Teaching Hospital between July 2004 and March 2008, in which serum cTnI had been assayed. Physical examination, systolic blood pressure, electrocardiography, and echocardiography data were obtained from all animals. Cases were categorised into the following groups: 20 dogs presented with congestive heart failure (CHF), 33 had stable congenital or acquired cardiac disease prior to CHF, 19 had tachyarrhythmias, 29 had significant bradyarrhythmias requiring pacemaker implantation, 6 had pericardial effusion and 18 had no cardiac disease.

In all dogs, the median cTnI was 0.26 ng/mL, with interquartile range of 0.01-11 ng/mL to 0.64 ng/mL. Kruskal Wallis ANOVA on ranks showed significant differences in cTnI between the groups (p<0.0001) with markedly elevated cTnI in dogs with CHF (median 1.12 ng/mL, range 0.27-180 ng/mL), bradyarrhythmias (median 0.50 ng/mL, range 0.05-180 ng/mL) and pericardial effusion (median 0.53 ng/mL, range 0.18-5.0 ng/mL).

Kaplan Meier survival analysis showed that dogs with cTnI < 1 ng/mL had median survival time of 1 year, compared with dogs with cTnI > 1 ng/mL surviving 3 months. Four animals with a median cTnI of 1.76 ng/mL (0.65-16.8 ng/mL) died within one week. Ninety animals are still alive with a median follow-up time of 11 months (range 0.5-44 months) and a median cTnI of 0.21 ng/mL (0.01-180 ng/mL). Dogs survived more than 1 year (n = 38), 2 years (n = 14) and 3 years (n = 5) had a median troponin of 0.18 ng/mL, 0.07 ng/mL and 0.05 ng/mL, respectively. Repeat sampling after 10 days - 2 years revealed no significant reduction in cTnI (p=0.08). Most dogs (70%) had cTnI remaining higher than the reference range suggesting ongoing cardiomyocyte injury. Animals with stable elevated or increasing cTnI levels at repeat sampling died within 2 months. This study showed that cTnI is helpful to assess severity, disease progression and prognosis in cardiac patients. Repeat sampling is useful to evaluate progression and control of disease.

Factors Associated with the Presence and Prognosis of Aspiration Pneumonia in a Population of Dogs with Megaoesophagus
Alix Thomson BVMS(Hons), CertSAM, MRCVS, Ian Ramsey, Emily Courcier, Rory Bell, Glasgow Veterinary School, 464 Bearsden Road, Glasgow, G61 1QH, UK

There are no clinical studies of aspiration pneumonia (AP) in the dog but it has a reputation of a poor prognosis and high mortality rate. This study examined a group of cases with a known predisposition to AP to search for variables that were associated with the presence of AP and survival in affected dogs.
Dogs diagnosed with megaeosophagus between 01/01/97 and 01/10/07 were identified from clinical databases at Glasgow University Veterinary School and reviewed. Cases without visible oesophageal dilation, clinical signs of dysphagia or where oesophageal dilation was only identified under general anaesthesia were excluded. AP was defined radiographically as the presence of an alveolar pattern or consolidation of ventral lung lobes. Data collected included signalment, historical, clinical, laboratory and radiographic findings, date and cause of death. Owners and referring veterinarians were contacted for follow-up data. Categorical data was analysed using either Fisher exact or Chi Square tests. Continuous data was analysed using Wilcoxon rank sum tests. Eighty-nine cases fulfilled the inclusion criteria, of which 34 (38%) had AP at the time of diagnosis. Cases with AP were less likely to be lighter (P = 0.02), have segmental oesophageal dilation (P = 0.04), have hyperglycemia (P = 0.026), or to survive to discharge (P = 0.004) than those without AP. AP was associated with abnormal lower respiratory tract noise (P = 0.03), higher median total white blood cell counts (P = 0.008) and median segmented neutrophil counts (P = 0.003).

At the time of censorship, 29/34 (85%) of cases with AP were dead. Amongst the dogs that died, 15/29 (52%) were euthanased because of AP. Ten of these cases died or were euthanased before discharge. Dogs that died of AP were more likely to have had oxygen therapy (P = 0.007), been in the intensive care unit (P = 0.007) or had antibiotics prior to diagnosis (P = 0.02). Presence of lung lobe consolidation and extent of the radiographic changes were not found to be significant.

This study suggests that smaller patients, and those with segmental oesophageal dilation (e.g. vascular ring anomalies) may have a reduced risk of developing AP. In a population of dogs with megaeosophagus, the presence of AP adversely affected short term survival, however 50% of patients with AP did survive to discharge. These are likely to be the less severely affected patients that do not require intensive care and oxygen therapy.

**Microalbuminuria as a Risk Factor in Dogs with Cardiovascular Disorders**

**Alev Akdoğan Kaymaz DVM, Banu Dokuzeýlül, Utku Bakirel,**

Department of Internal Medicine, Faculty of Veterinary Medicine, Istanbul University, Avcilar Campus, 34320 Avcilar, Istanbul, Turkey

Increased albumin excretion is often a concomitant of several unfavorable metabolic and nonmetabolic risk factors that indicates the presence of subclinical organ damage at the renal and cardiac level. Because of unique ability to reflect many clinically relevant abnormalities, microalbuminuria (MA) is currently considered as a marker of cardiovascular risk in human medicine. The present study was therefore initiated in an attempt to clarify the relationship between blood pressure, urine protein/creatinine ratio (UPC) and MA in dogs with cardiovascular disorders (CVD).

Totally 40 dogs with different complaints such as coughing, weakness, exercise intolerance referred to Department of Internal Medicine, Faculty of Veterinary Medicine, Istanbul University were included in this study. The ages varied between 2 and 18 years. Microalbuminuria (E.R.D. Health Screen Test), electrocardiography (ECG), echocardiography, UPC and blood pressure measurement (HDO) levels were detected in every patient. Serum BUN, creatinine, glucose, LDH, CK, K and urine analyses were also assessed.

CVDs were determined as mitral valve disease (n = 20), dilated cardiomyopathy (n = 12), myocarditis (n = 2), tricuspid valve disease (n = 3), aortic stenosis (n = 1), ventricular septal defect (n = 1) and hypertrophic cardiomyopathy (n = 1). Twenty three of 40 had also diabetes mellitus (n = 3), lower urinary tract disease (n = 13) and chronic renal failure (n = 4), epilepsy (n = 2) and bronchitis (n = 1). MA was detected as positively in 29 dogs with different levels. Seventeen of these dogs with only CVDs had positive results for MA. When MA (+) and MA (-) groups compared, urine specific gravity was increased (p<0.05) and urine creatinine was decreased significantly (p<0.01) in MA (+) dogs, statistically. Serum BUN and Creatinine had a positive correlation with UPC at the level of p<0.01, statistically. Although there was a positive correlation between urine protein and urine creatinine, negative correlation was detected between UPC and urine creatinine. There were also positive correlations between LDH and CK (p<0.01), CK and diastolic blood pressure (DBP) (p<0.01), CK and UPC (p<0.01), systolic blood pressure (SBP) and DBP (p<0.01).

It is emphasized that microalbuminuria has been shown as a new marker to predict the risk of cardiovascular disorders in dogs.
THYROID FUNCTION IN HEALTHY SALUKIS
Robert E Shiel1, Mary Dee Sist1, Raymond F Nachreiner1, Carmel T. Mooney MVB, MPhil, PhD, DECVM-CA, MRCVS2, 1: Small Animal Clinical Studies, School of Agriculture, Food Science and Veterinary Medicine, University College Dublin, Belfield, Dublin 4, Ireland, 2: Diagnostic Center for Population and Animal Health, Michigan State University, East Lansing, Michigan, USA

Although thyroid hormone results from sighthounds frequently lie outside standard laboratory reference intervals (RIs), limited information is available within individual breeds, including salukis. The aims of this study were to document thyroid hormone concentrations in salukis; calculate breed-specific RIs; and determine effects of reproductive status, age, and activity.

Blood samples were collected, allowed to clot, centrifuged, separated within 2 hours of collection, and frozen at -20°C until assays were performed. Total thyroxine (T4), free T4 (equilibrium dialysis), total triiodothyronine (T3), free T3 and thyroid stimulating hormone (TSH) concentrations were measured using validated assays. Median and RI (2.5th-97.5th percentiles) were reported.

Mann-Whitney testing was used to compare results between groups and Spearman’s rank correlation testing to assess correlations with age. Blood samples were collected from 283 salukis: 154 were female (15 neutered) and 129 male (6 neutered); age ranged from 12-167 (median 61) months; 49 were coursing and 234 non-performing.

Median (RI) concentrations of total T4 (n = 282), free T4 (n = 216), total T3 (n = 281), free T3 (n = 271) and cTSH (n = 282) were 13 (1.40) nmol/L, 12 (2.0-30.3) pmol/L, 1.0 (0.4-2.1) nmol/L, 4.0 (2.8-6.5) pmol/L and 0.18 (0.0-0.86) ng/ml, respectively. Total and free T4 concentrations were significantly (p<0.0001) lower in males than females. Total T4, free T4 and TSH concentrations were correlated with age (p = 0.037, r = -0.12; p = 0.0009, r = -0.22; p<0.0001, r = 0.35; respectively. TSH concentrations were significantly (p = 0.03) higher in non-performing than performing dogs.

Breed-specific RIs should be used when interpreting thyroid hormone profiles from sighthounds. The diagnostic utility of these tests requires further assessment.

LIVER PROFILE IN DOMESTIC PARROTS—WHAT’S NEWS? NEW DATA FROM CORRELATION BETWEEN HISTOLOGY AND BIOCHEMISTRY
Renato Ceccherelli DVM1, Massimiliano Rocco1, Marco Aloisi1, Stefano Pesaro1, Francesca Beribè1, Simone Scoccianti1, Riccardo Gherardi1, Giacomo Rossi1, 1: Practitioner, Tuscany, Italy, 2: WWF Italia Species and Traffic Program, Rome, Italy, 3: Department of Veterinary Science, University, Camerino (Mc), Italy

The aims of the study were to value the safety and the diagnostic relevance of endoscopic liver biopsies in parrots during routinely endoscopic examination and the correlation between histology and a complete liver biochemical profile.

175 clinically healthy parrots belonging to 10 genera and 26 species, with a body weight that ranged between 127g and 1300g, from the Rescue Centre for Wild and Exotic Animals in Semproniano (Grosseto, Tuscany, Italy) managed by the WWF, were endoscopically examined during a routine check-up. The lateral access to the body cavity was used, and the lateral border of the liver was then grasped and sampled. A blood sample was taken from jugular vein from every subject before performing the biopsy. All animals survived the intervention without any clinical problem. The biopsy specimen was immediately fixed in 10% buffered formalin.

Definitive diagnoses included focal hepatic necrosis, cholangitis-cholangiohepatitis, diffuse chronic-active hepatitis, chronic-granulomatous hepatitis, vacuolar hepatopathy, pigment storage, perportal fibrosis, microvascular dysplasia, abnormal bile-ducts proliferation, mucinous metaplasia of bile duct epithelium and normal hepatic tissue.

These results demonstrate that endoscopic liver biopsy in avian patients is generally well tolerated and can be considered as relatively risk free – highly sensible test to liver status evaluation, as reported in mammals. Additionally, this study reveals an interesting correlation between above mentioned lesions and some biochemical values alterations: increased levels of GGT, GOT, GPT were constantly observed in focal hepatic necrosis; increased values of ALP were observed with phlogosis involving bile-ducks, and plasma LDH elevation was strictly related to acute parenchymatous phlogosis. In the African grey parrots with diffuse chronic-active hepatitis and fibrosis we found a constant increase in GGT levels, and in parrots belonging to the Ara genus we found a constant increase in total bilirubin associated with hepatic phlogosis. Finally, in Aprosmictus erythropus species
Virulent canine babesiosis is characterised by marked and life threatening changes in homeostasis. These changes are partly reflected in the serum biochemistry parameters of patients suffering from severe and complicated canine babesiosis. Various smaller studies have briefly investigated the serum biochemical and other electrolyte changes, but failed to ascertain and publish their association with mortality in canine babesiosis molecularly confirmed to be caused by Babesia rossi.

We undertook a prospective study to determine the serum biochemistry concentrations of dogs with canine babesiosis at presentation and observed the associated mortality. Ninety five patients were studied. The initial diagnosis of canine babesiosis was made on stained thin capillary blood smears. Diagnosis and babesia subtype was confirmed as B. rossi and all patients were negative for Ehrlichia canis by polymerase chain reaction (PCR) and reverse line blotting (RLB). Three outcomes were defined: dogs treated as outpatients, (n = 32); hospitalised dogs that survived, (n = 56); and hospitalised dogs that died, (n = 7). The following biochemical parameters were determined: total protein, albumin, globulin, creatine kinase (CK), creatinine, alkaline phosphatase (Alp), alanine aminotransferase (Alt), bile acids, glucose, sodium (Na), potassium (K), chloride (Cl), ionised calcium (Ca), magnesium (Mg), phosphorus (P), amylase and lipase. Data was tested for normality with the Kolmogorov Smirnov test and analysed by the non-parametric Kruskal Wallis test for comparison of more than two groups. To compensate for the testing of multiple parameters, significance was set at $P < 0.001$. Data is expressed as the median value.

Overall mortality was 7/95 (7.5 %). Median serum bile acid, Mg and P concentrations were significantly higher ($P < 0.001$) while median Ca concentrations were significantly lower ($P < 0.001$) in dogs that died. Less severely affected dogs treated as outpatients had significantly lower median serum CK ($P < 0.001$) concentrations than the other two groups. No significant differences at $P < 0.001$ were detected between the groups in any of the other parameters. This study demonstrated that mortality was associated with elevated bile acid, Mg and P and with lower ionised Ca concentrations in dogs with virulent B.rossi infection. Lower serum CK concentrations were clearly associated with milder disease, while elevated bile acid concentrations support the notion of hepatic dysfunction playing a role in adverse outcome. The respective roles of elevated serum Mg and P and decreased calcium concentrations warrant further study.

**Evaluation of Thyroid Function in 204 Infertile Bitches**

Dr Aurélien Grellet, Dan Rosenberg, Alain Fontbonne, Ecole Nationale Vétérinaire d’Alfort, Service de Reproduction Animale, ENVA, 7 Avenue du Général de Gaulle, Maisons Alfort, France

*Introduction*

Hypothyroidism has been considered for many years as a potential cause of hypofertility or infertility in male and female dogs, especially in large breeds. However, it remains highly controversial. The purpose of our retrospective study was to determine the incidence of hypothyroidism among male and female infertile dogs in potentially predisposed breeds towards this disease.

*Materials and methods*

204 dogs (50 males, 154 females) from five different large sized breeds were included: 43 Great Danes, 44 Dogue de Bordeaux, 42 Leonbergers, 46 Golden retrievers, and 29 English mastiffs. They were all breeding animals living in breeding kennels. Dogs are classified into three categories according to the parameters of reproduction: dogs with a normal fertility (no disruption of fertility), dogs with a low fertility (females who have not been pregnant at least twice in a row, or males not having given offspring at least twice in a row), and intermediate dogs (not falling within any of two groups). Baseline serum concentration of total thyroxine (T4) and thyroid stimulating hormone (TSH) were used for the diagnosis of hypothyroidism. Animals are classified into three categories: ‘euthyroid dogs’ (dogs with normal T4 and TSH), ‘hypothyroxinemic dogs’ (dogs with a low T4 and a normal TSH), and ‘hypothyroid dogs’ (dogs with a low T4 and a high TSH).
**Results**

**Fertility**

In 3/5 breeds studied, less than half of the animals showed a normal fertility: 48.8% for Leonbergers, 27.6% for English mastiffs, and 25% for Dogue de Bordeaux. In our study we encountered 31 dogs showing a low fertility.

**Thyroid function analysis**

Among all dogs, we found 9.8% dogs presenting a low T4 plasma level and a normal TSH plasma level: 2.3% in Great Danes, 31.8% in Dogue de Bordeaux, 4.8% in Leonbergers, 6.5% in Golden retrievers, and 0% in English mastiffs. We found only 1.5% dogs having a low T4 plasma level and a high TSH plasma level.

**Compared analysis of fertility and thyroid function**

83.9% (26/31) of dogs with a low fertility, males and females, had normal T4 and TSH plasma values. The three animals with a low T4 and a high TSH did not show any fertility problem. There was no statistical difference on thyroid function between fertile and infertile dogs and bitches.

**Conclusion**

From our results, hypothyroidism does not appear as a substantial cause of infertility in the bitch and the dog.

---

**Reticulated platelet counts in the assessment of bone marrow thrombopoiesis in dogs - preliminary data**

Regina Kiomi Takahira PhD, Luis Fernando Negro Silva, Marjorie de Assis Golim, São Paulo State University, Distrito de Rubião Junior, s/n Caixa Postal 560, São Paolo, Brazil

Thrombocytopenia is one of the most common hematological disturbances in dogs and may occur in several diseases. Reticulate platelets are young platelets that are usually evaluated by flow cytometry and may be useful in determining the etiology of multifactorial thrombocytopenia. The aim of this study was to evaluate the reticulated platelet importance as a thrombopoiesis marker in regenerative and nonregenerative thrombocytopenic conditions. These preliminary data were obtained from 15 healthy dogs (control group), 10 thrombocytopenic dogs (< 100,000 platelets/μL) without megakaryocytic hypoplasia (group A) and 10 thrombocytopenic dogs (< 100,000 platelets/μL) with megakaryocytic hypoplasia (group B).

Blood samples were collected and the platelet rich plasma (PRP) was extracted. Thiazole orange (TO) was used to stain RNA content in reticulated platelets. A negative control (without staining) and TO fixed PRP were incubated in the dark during one hour and the fluorescence was quantified by flow cytometry. CBCs were obtained using a Cell-Dyn 3500 hematology analyzer. Megakaryocytes were quantified in marrow particles, collected from aspiration cytology and correlated to reticulated platelets counts.

The results are shown in the table:

<table>
<thead>
<tr>
<th>Mean ± SD</th>
<th>Mk/Particle</th>
<th>Reticulated platelet (%)</th>
<th>Reticulated platelet (/μL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>4.1 ± 1.4</td>
<td>1.4 ± 0.9*</td>
<td>3.857 ± 2.971**</td>
</tr>
<tr>
<td>Regenerative</td>
<td>5.6 ± 2.4</td>
<td>14.0 ± 8.1*</td>
<td>6.540 ± 4.125*</td>
</tr>
<tr>
<td>Nongenerative</td>
<td>0.8 ± 1.0</td>
<td>10.7 ± 8.5*</td>
<td>2.694 ± 2.309*</td>
</tr>
</tbody>
</table>

No significant difference was observed in the percentages of reticulated platelets between the two groups (A and B), but when the absolute values were analyzed, higher values (p<0.05) were observed in the regenerative group. The relative and absolute values of reticulated platelets observed in control group were in agreement with a report for non thrombocytopenic dogs. There was no correlation between megakaryocytes count and absolute reticulated platelets.

The absence of correlation with the number of megakaryocytes indicates that even in a condition of apparent megakaryocytic hypoplasia thrombopoiesis may be not impaired. Although the marrow cytology is usually utilized to verify the thrombopoietic activity, it may be not representative of the real platelet production, once megakaryocytes may show an irregular distribution in bone marrow aspirates. Nevertheless, reticulated platelets demonstrate that they are peripheral markers of marrow thrombopoiesis in dogs, with the advantage of being a less invasive technique than bone marrow cytology.
Diarrhea in dogs is one of the most common maladies facing the small animal practitioner, and bacterial enteropathogens play an important role in many cases. *Clostridium perfringens* (*C. perfringens*) and *Clostridium difficile* (*C. difficile*) are most common incriminated bacteria in canine diarrhea. Canine parvovirus (CPV) and coronavirus (CCV) are also very important infectious pathogens. The prevalence of infectious enteropathogenic agents is depends on the country. The objective of this study was to examine the prevalence of viral and bacterial enteropathogens, and suggest an useful information for treatment in diarrheic dogs.

The 127 fecal specimens of diarrheic dogs suspected clinically with enteropathogenic infection were collected in 2007 from randomly selected regions in Korea. DNA and RNA were extracted from the fecal specimens, and then, PCR or RT-PCR was carried out to detect canine enteropathogenic agents, CPV, CCV, *C. perfringens* and *C. difficile*. VP2 gene of CPV, M gene of CCV, enterotoxin (*cpe*) and beta2 toxin (*cpb2*) genes of *C. perfringens*, and A and B toxin (*tcdA* and *tcdB*) genes of *C. difficile* were detected, respectively. As the results, CPV and *C. perfringens* had the high prevalence 52.0% and 50.4%, respectively. CCV had moderate prevalence (33.1%), and *C. difficile* had relative low prevalence (18.1%). There were no correlations of prevalences among the CPV, CCV, *C. perfringens*, and *C. difficile*. The *cpe* and *cpb2* genes were detected 57.8% and 1.6% in 64 *C. perfringens* positive specimens. The *tcdA* and *tcdB* genes were detected 0.0% and 13.0% in 23 *C. difficile* positive specimens. Unfortunately, only 71 of 127 dogs had the information about the prognosis. The 70.4% over the 71 dogs were survived. Dogs with CCV and *cpe* positive *C. perfringens* infection indicated higher prevalence of death. CCV infection indicated a significant difference between the dead and live group (37.1% and 32.0%, respectively) at a P<0.05 level of significance in statistical analysis. Although there was no statistical difference in the presence of *cpe* positive *C. perfringens* infection in the death and live group, the prevalence of *cpe* in the death group was 81.8%. These results imply that a *Clostridium spp.* control is important in infectious enteropathogenic diarrheic dogs regardless of enteropathogenic viruses prevalence.

### Feline Immunodeficiency Virus (FIV): Evaluation of Viral Load with Quantitative Competitive Polymerase Chain Reaction (QC-PCR) in Cats Treated with AZT

Maria Amelia Gisbert, Dr Víctor Alejandro Castillo PhD, Ana Bratanich, Silvia Feijoo, Adriana Fontanals, Adriana Suraniti, Nélida Gómez, Facultad de Ciencias Veterinarias (UBA), A. Clínica Médica de Pequeños Animales, Av. Chorroarín 280, (1427) C.A., Buenos Aires, Argentina

Feline Immunodeficiency Virus (FIV) infection in domestic cats results in an acquired immunodeficiency syndrome (AIDS) like to HIV in human. In Argentina FIV infection is greater than feline leukemia virus what result in an excellent model to study HIV infection as well as to improve pet cats health. The purpose of this study was to evaluate AZT-response in cats with FIV.

**Material and methods**

A longitudinal analysis, on 7 cats were performed during 12 months under Zidovudine (AZT) 5mg/kg (bid) every other month as only treatment. CD4/CD8 ratio, AGP, Albumin/Globulin ratio and viral load were studied. Theses variables were analysed at basal time, 6 and 12 months of treatment. FIV was confirmed by serology and PCR. In addition to the evaluation of the clinical signs blood chemistry, hematology and other complementary diagnostic methods. CD4/CD8 ratio was performed with: 8100-01 Southern Biotechnology, anti CD4 Vpg 34, Willett, Glasgow University, anti CD8, VP9G, Willett, Glasgow University and Fluorescent antimouse IgG Southern Biotechnology, Becton and Dickinson Facs Scan Citometer. Feline α-1 glycoprotein (AGP) was performed with radial immunodifussion test provided by Ecos Institute, Japan. Viral load was measured with Quantitative competitive chain reaction (QC-PCR). ANOVA-Friedman’s test following by Dunn’s multiple-comparison test and Spearman’s correlation were carried out. Values are expressed as mean ± SEM being significant p<0.05.

**Results**

CD4/CD8 (Fig1) showed significant differences among the evaluated times (ANOVA p = 0.016), having a significant increase at 6m vs. basal (p<0.05). Viral load (Fig2) also
showed differences (ANOVA p=0.0003) among the times and there is a significant decrease (p<0.01) between 6m vs. basal. Viral load vs. CD4/CD8 (Fig.3) are negative correlated (r = -0.71; p = 0.0003). The others variables did not show significant differences or correlation among them as long as in the evaluated times. Laboratory results and clinical signs showed a great improve.

Conclusions
After 6 months of treatment a stressed decrease of viral load and increase of CD4/CD8 ratio were observed. These changes were associated with improvement of clinical signs and laboratory finding. Nevertheless, when the parameters previously mentioned were re-evaluated at 12 months, an escape phenomenon is evidenced. This event could be explained by a resistance developed to AZT when the drug is indicated alone, being necessary to study the effect of therapeutics cocktails.

THE EFFECT OF AGE ON HOW CATS ARE FED
Dorothy P. Laflamme MS, DVM, PhD, Dipl ACVN1, Sarah Abood2, Andrea Fascetti3, Linda Fleeman4, Lisa Freeman5, Kathy Michel6, 1: Nestle Purina PetCare, St. Louis, MO, USA, 2: Michigan State University, East Lansing, MI, USA, 3: University of California-Davis, Davis, CA, USA, 4: University of Queensland, Queensland, Australia, 5: Tufts University, North Grafton, MA, USA, 6 University of Pennsylvania, Philadelphia, PA, USA

Aging cats experience a larger number of chronic diseases than younger cats: some of these conditions may benefit from special dietary management. The hypothesis examined in this study was that geriatric cats are fed differently than younger adult cats.

Methods
The data used for this study were generated as part of a larger study, using a telephone survey of pet owners. A questionnaire was administered to pet owners selected by a randomized process using a local telephone book from each study site (four in the USA, one in Australia). If an owner had multiple pets, a single pet in the household was used as the subject of the survey. All telephone calls were made between May-August, 2004, and 1074 surveys were completed. After excluding dogs, kittens and all
Obesity in dogs and cats: risk factors and tools to treat successfully
Géraldine Blanchard DVM, PhD, Dipl. ECVCN1, Laurence Colliard2, Bernard-Marie Paragon3
1: A.N.E, 33 Avenue de l’île de France, 92160 Antony, France, 2: E.N.V.A., Maisons Alfort, France

1. Context
New drugs to treat obesity are now available. Different studies, but none in France, reported 18 to 44% overweight dogs and 6% to 52% overweight cats, with suggested risk factors differing between species. Obesity is a disease, and its treatment is now known as beneficial to the health status and life expectancy of pets.

2. Objectives
The purpose of our studies was to assess prevalence and risk factors of overweight in dogs and cats from an urban healthy population in France, to investigate the owner’s perception of their animal, using different tools, and to compare recommendations provided on the petfood labels to treat overweight to current recommendations.

3. Key messages
- Out of 616 dogs and 385 cats studied over a 3 month period, 38.8% of dogs and 26.8% of cats were overweight, 56.5% and 71.2% optimal, and 4.7% and 2.1% underweight.
- Risk factors identified for obesity were: for Cats: neutering, middle age, 41-60 yr old owners, and underestimation of cat’s body condition by owners; for Dogs: age, gender and sexual status, and Retriever breed. These results confirm previous findings.
- Owners underestimated the body condition of their overweight pet, more with an oral scale than with visual comparison with pictures.
- The comparison of the energy intake recommended from different petfood labels recommendations with the in-use methods to achieve weight loss in dogs and cats showed that most pet foods were in the range. But a few exceeded even the maintenance requirement, and very few proposed a detailed panel of the options considering the variability of pets.
- Depending on the breed, gender and activity of the overweight pet, the recommendations have to be individually adjusted by the practitioner, to ensure the success if the weight loss program.

4. Conclusion
Obesity in France does not differ from other countries (no French paradox for pets!). New drugs to treat dogs’ obesity shall be considered in combination with appropriate diet and advice. The treatment requires to use adapted methods to educate owners about the overweight of their pet. A minimal knowledge in clinical nutrition is finally required to ensure the success of practitioners in the treatment of obesity in dogs and cats.
Dystocia and neonatal mortality: A retrospective study on 1615 bitches
Emmanuel Fontaine DVM, Aurelien Grellet, Xavier Levy, Alain Fontbonne, Service de Reproduction Animale, Ecole Vétérinaire d’Alfort, 7 Avenue du Général de Gaulle, 94700 Maisons Alfort, France

In the dog, dramatic fetal losses may occur when whelping is not correctly managed. The wide range of clinical factors that have to be taken into account, and the complexity to sometimes diagnose dystocia, may be quite confusing. The aim of this study was to point out the risk factors affecting parturition and neonatal mortality in order to help veterinarians to anticipate dystocia, and to let them know early enough how and when a medical supply is required.

Material and methods
Data on 1615 pregnant bitches were collected in a database. Age ranged between 1 to 9 years (mean 3.5 years). The bitches belonged to 124 different pure breeds, dispatched into 10 different groups according to International Cynologic Federation (FCI) classification. Statistical analysis were carried out to study the correlations between maternal and fetal dystocia, neonatal mortality and the following parameters: age, breed category, weight, number of previous whelpings, duration of parturition, number of pups per litter and pregnancy length (from the day of ovulation estimated by plasma progesterone assays).

Results
Whelping occurred 62 days post-ovulation in average (SD = 2.6) and lasted 6.9h (SD = 5.6). 84% of bitches had an eutocic parturition. When dystocia occurred, a C-section was performed in 81% of the cases. Altogether neonatal mortality rate was 13.7% (SD = 24.3), and 37.5% of the litters were concerned. Factors that appeared to be highly correlated with dystocia were the breed category (group 2: guard dogs and molossoids / p<0.01), weight (>71 kg, p<0.01), duration of parturition (>11.0 h / p<0.01), number of pups per litter (<5.9 pups / p<0.01) and age, in case they were primiparous bitches (>4 years / p = 0.02). Factors that appeared to be highly correlated to neonatal mortality were the breed category (group 5: primitive, spitz and nordic breeds), the occurrence of dystocia versus eutocia (p<0.01), pregnancy length, in case of parturition occurring before 59 days or over 65 days after ovulation (p<0.02%), number of pups per litter, less than 5 or over 10 pups per bitch (p<0.01%).

Discussion and Conclusion
This clinical study enlightens at a large scale specific factors increasing the risk of dystocia or neonatal mortality in purebred bitches. As such, it may be helpful for veterinarians in order to detect in advance bitches that may require a medical assistance for parturition. Concerning neonatal mortality, the optimal time of parturition was found to be between day 59 and 65 after ovulation.

Use of endometrial cytology and bacteriology to diagnose endometritis in infertile bitches
Emmanuel Fontaine DVM, Xavier Levy, Aurelien Grellet, Alain Fontbonne, Service de Reproduction Animale, Ecole Vétéranire d’Alfort, 7 Avenue du Général de Gaulle, 94700 Maisons Alfort, France

Very few reports have been made about endometritis in the bitch. Today, transcervical catheterization by vaginal endoscopy allows us to evaluate the endometrium. Diagnosis criteria were determined according to previous studies on uterine cytology and bacteriology. The aim of our study was to test the efficiency of this technique to diagnose endometritis and furthermore, to evaluate its incidence within infertile bitches.

Material and methods
26 bitches presented for infertility in Alfort Veterinary College were included. Classical infertility investigations were not indicative. A vaginal endoscopy was performed and presence of vaginitis and cervical discharge were evaluated. Then, a transcervical catheterization was performed using a human ureteral catheter (Ureteral CRU® ch.6 223602). Flushing of the uterine lumen was realized with sterile saline fluid (NaCl 0.9%, 2ml/L/10 kg instilled then reabsorbed) and collected samples were used for uterine cytology and aerobic bacteriology. If cytology pointed out an inflammatory state correlated to bacterial heavy growth, the bitch was considered to suffer from infectious endometritis. A cytologic inflammatory state of the uterus in the absence of bacterial growth was considered to be a non infectious endometritis.

Results
10/26 bitches suffered from endometritis. Among them, seven suffered from infectious endometritis. Three bitches had a bacterial heavy growth without cytologic abnormalities and it was considered as a sign of contamination by the normal vaginal flora.
Infectious endometritis was diagnosed during dioestrus (6/7) and prooestrus (1/7). Non infectious endometritis was diagnosed in dioestrus (2/3) and anoestrus (1/3). Four bitches for which endoscopy was performed in dioestrus encountered pyometra after flushing, two of which were not initially suffering from endometritis. Five bitches suffering from endometritis were further bred after treatment combining antibiotics +/- aglepristone: they all went pregnant.

Discussion
Endometritis seemed to have in most cases an infectious origin but these results may be underestimated, as some other pathogens (anaerobic bacteria, mycoplasms, fungi), were not searched for. Dioestrus seems to be the best period for diagnosis. However, the endometrium impregnated with progesterone is more sensitive and despite all precautions, this could explain that we got induced pyometra after endoscopy. Early anoestrus may be a more adequate period as progesterone impregnation is over. Impact of endometritis is underestimated and, in our opinion, should be investigated in each unexplained case of infertility in bitches. The technic used here seems reliable: all bitches treated were bred successfully whereas previous infertility treatments had not succeeded. Defining more accurate criteria will improve its efficiency.

Dexamethasone (Dexa) has been commonly used in humans and domestic animals, particularly to treat tendon injuries and cartilage degeneration, but is often associated with tendon rupture and impaired tendon and cartilage healing. In the present study we investigated Dexa’s in vitro effects on the growth of cell proliferation and the induction of apoptosis in canine Achilles tendon cells and chondrocytes. Cell proliferation after treating with Dexa for 2-6 days was quantified by a 2,3-bis{2-methoxy-4-nitro-5-sulfophenyl}-2H-tetrazolium-5-carboxyanilide inner salt assay (XTT).

The results showed that Dexa could inhibit the proliferation of tendon cells and chondrocytes at increasing concentrations (0.1-50 μg/ml) in compared with untreated cells. Cell apoptosis was induced by Dexa, as evidenced by the typical nuclear apoptosis using Hoechst 33258 staining. Dexa increased the apoptosis of canine tendon cells and chondrocytes in a time-dependent manner. In canine tendon cells and chondrocytes treated with 25 and 50 μg/ml concentration of Dexa the number of condensed apoptotic nuclei was significantly increased. In addition, culturing with Dexa and the glucocorticoid receptor blocker mifepristone significantly arrested apoptosis of tendon cells and chondrocytes.

Based on our in vitro data, we speculate that in vivo treatment with glucocorticoids may diminish the proliferation of tendon and cartilage cells by increasing apoptosis and suppressing the proliferation. Our findings suggest that Dexa could be used with caution in dogs with articular or tendon problems.

Fear based aggression in old dogs – a case-control study of 71 patients
Jagna P Kudla DVM, Tadeusz Kaleta, Department of Clinical Sciences, Warsaw University of Life Sciences – SGGW, ul. Nowoursynowska 159c, 02-776 Warsaw, Poland

It is known that because of brain ageing process and old-age diseases dogs may exhibit an aggressive behaviour and the fear based aggression is more common in old dogs than the other types of aggression (2). None of these statements however, has been confirmed by scientific investigations.

Methods
To investigate circumstances of aggressive behaviour we elaborated a questionnaire composed of three parts: environmental, behavioural and an anamnesis. The owners of aggressive dogs were asked to answer the 100 questions. Subsequently each of 71 dogs was examined and submitted to a 2-hour observation with or without stimuli triggering aggression. The dogs were divided into three categories: young (1-3y), adult (over 3y) and aged (over 6y in the case of large size breeds, over 7y in the case of medium size breeds and over 9y in the case of small size breeds). The presented aggressive behaviour was classified according to the criteria elaborated...
Results
The analysis revealed that the older the dogs were, the more fear based aggression cases there were. Among aged dogs it was 56.2%, while among young and adult dogs it was 27.4% and 35.7%, respectively. The prevalence of aggressive behaviour in aged, previously non-aggressive dogs was correlated with the onset of old-age diseases and brain ageing process (62.5%) whereas the intensification of aggressive behaviour had mainly behavioural causes (91.6%). We have observed that in old, previously non-aggressive dogs the critical, distancing and irritable aggression were the most frequently presented types of aggression with the highest rate for the distancing aggression (55.5%). We have also found that severe Cognitive Dysfunction Syndrome may cause an occurrence of critical aggression in old patients. In the three cases of critical aggression, two dogs suffered from severe CDS.

Discussion
These findings confirm that the fear based types of aggression are more common in old dogs. Interdisciplinary scientific investigations joining veterinary behavioural medicine and gerontology are still infrequent, so these findings contribute to broadening of the knowledge about ageing process in dogs. The number of cases however, is not representative for the general population, thus another investigation is needed. Nevertheless, these findings may help to deal with geriatric dogs’ behavioural problems in veterinary practice.

Keywords: aggression, ageing process, dogs

TO IDENTIFY FACTORS INFLUENCING THE DEMOGRAPHY OF THE IRISH PET POPULATION

Martin Downes MVB Dip Comp, Simon More, CVERA, Veterinary Science Centre, School of Agriculture Food Science and Veterinary Medicine, UCD Dublin, Belfield, Dublin 4, Ireland

Pets have a positive effect on the mental and physical wellbeing of pet owners. Little information exists about the demographics of the pet population in Ireland. There are concerns regarding a growing stray population, pollution, bite injuries and zoonotic disease spread. Currently there is a stray dog overpopulation in Ireland, with little change in the last 4 years. 14,598 dogs were destroyed in 2006. There is also a stray cat problem in Ireland.

The aim of this study was to identify factors influencing the demography of the Irish pet population. A questionnaire was constructed to collect data about the demographic aspects of each household and the companion animals therein. We focused on location, building structure, social economic grade (SEG), nationality and family structure of the household, and the sex, age and source of each pet dog and/or cat. It was administered via a Computer Assisted Telephone Interviewing centre to 1250 households, selected using random digit dial techniques and quota controls. The data was analysed using STATA® and SPSS®.

36.6% of Irish households have one or more pet dogs. 21.2% of households feed cats and 11.5% allow cats into their home. 45.6% of pet dogs and 77% of household cats were neutered, with neutering rates higher in females for both species.
**INCREASED SKIN LEVELS OF THE ALIAMIDE PALMITOYLETHANOLAMIDE AND OTHER ENDOGENOUS FATTY ACID AMIDES IN DOGS WITH ATOPIC DERMATITIS**

Dr Stefania Petrosino,
Francesco Albanese,
Francesca Abramo,
Vincenzo Di Marzo

1: Endocannabinoid Research Group, Institute of Biomolecular Chemistry, Consiglio Nazionale delle Ricerche, Via Campi Flegrei 34, Comprensorio Olivetti, 80078 Pozzuoli (NA), Italy, 2: Clinica Veterinaria L'Arca, Napoli, Italy, 3: Department of Animal Pathology, University of Pisa, Pisa, Italy

Atopic dermatitis (AD) is an itchy chronic skin disease and the second most frequent cutaneous hypersensitivity in dogs. In canine AD, a structurally and functionally defective skin lipid barrier has recently been shown. Several reports that tissue concentrations of endogenous fatty acid amides (FAAs) and endocannabinoids increase in some inflammatory and degenerative disorders have been published. There is evidence that these increases could play an ‘autoprotective’ role. The purpose of this study was to investigate whether dogs affected with AD exhibited abnormal skin levels of the aliamide palmitoylethanolamide (PEA) and other FAAs.

Punch biopsy specimens (6 mm) were obtained from normal skin of 5 privately owned dogs without clinical evidence of dermatologic disease and from the lesional skin of 5 privately owned dogs diagnosed with AD. All dogs were of various breeds. In the AD group and in the control group dogs were between 1.5 and 11, and between 4 and 13 years of age, respectively. Skin biopsy specimens of approximately the same wet weight in both groups (~45 mg), were stored at -80°C until processing. Tissues of approximately the same wet weight in both groups (~45 mg), were stored at -80°C until processing. Tissues were homogenized and lipid-containing organic phase (corresponding lipid extracts, were significantly elevated (p<0.05). The levels of PEA showed the highest increase, being more than 30-fold higher in AD lesional skin than in normal non-atopic skin. The levels of OEA and 2-AG in AD lesional skin were found to be 30- and 14-fold higher than in normal non-atopic skin, respectively. AEA showed the lowest increase (~6-fold) and also the lowest content in bioptic samples from the canine skin. The present data represent the first demonstration of a significant difference in the lipid content and levels of the aliamide PEA and other FAAs / endocannabinoids between the skin of normal dogs and dogs affected with AD.

Partialy supported by Innovet Italia S.r.l.

---

**LATE ONSET PROGRESSIVE RETINAL ATROPHY (PRA) IN THE ABBYSSINIAN AND SOMALI CAT; EVALUATION OF ALLELE FREQUENCY IN EUROPE FOR THE CAUSATIVE MUTATION**

Janine Huebner, Fachtierärztin für Virologie, MRCVS,
Ines Langbein-Detsch, Kristina Narfström

1: Laboklin Labor für Klinische Diagnostik GmbH & Co Kg, Steubenstrasse 4, 97688 Bad Kissingen, Germany
2: Department of Veterinary Medicine and Surgery, College of Veterinary Medicine, University of Missouri, Missouri-Columbia, USA

**Background**

A recessively inherited late on-set type of PRA was described for the first time in Abyssinian cats in Sweden 25 years ago. A high frequency of the disease was observed; it was calculated that 45% of Abyssinian cats were affected by the progressively blinding disease, 44% were carriers and 11% were normal. Recently, the causative mutation for the defect was discovered; a single nucleotide polymorphism in the CEP290 gene, allowing for a mutation detection test to be developed. The present study was performed in order to elucidate the allele frequency in Europe for the causative mutation recently discovered, now not only in Abyssinian, but also in Somali cats.

**Methods**

The detection of the mutation was performed by a real-time Taq-Man PCR assay using fluorescence labeled probes specific for either the wildtype allele or the rdAc-mutation. Cheek swabs (sterile cotton swabs, Nerbe Plus) with air dried saliva obtained by the owners or lab by regular mail or by courier service.

Proceedings of the 33rd World Small Animal Veterinary Congress 2008 - Dublin, Ireland
**Results**
A total of 484 cheek swabs from Abyssinian and Somali cats from 14 different European countries were analyzed. Sixty one percent were found to be homozygous normal, 31% heterozygous and 4% homozygous affected for the causative mutation. The calculated frequency of the mutant rdAc-allele of Abyssinian and Somali cats in 2007 is 19.6%.

**Discussion**
The allele frequency 25 years ago in Europe outside of Sweden is not known. It is, however, probable that the frequency was high, since there was interaction between breeders of Abyssinian and Somali cats mainly in northern Europe and affected cats were observed at the time, also in Finland, Norway, Holland and Germany. It is thus encouraging that the number of affected cats has now become markedly reduced mainly by the use of non-affected animals (cats that are heterozygous or homozygous normal for the mutation) for breeding. The mutation detection test commercially available may allow for eradication of this specific gene defect.

---

**Deafness in small animals: a retrospective study of 122 cases**

Ezio Bianchi DVM, Daniela Callegari, Manuela Ravera, Maurizio Dondi

University of Parma, Via del Taglio 8, 43100 Parma, Italy

Inherited congenital sensorineural (ICS), acquired later-onset sensorineural (ALS), and acquired later-onset conductive (ALC) are the types of hearing loss usually found in clinical practice in companion animals. The aim of this study was to retrospectively evaluate the abnormalities found in dogs, cats and ferrets referred to the Veterinary Faculty of Parma for evaluation of auditory function tested with brainstem auditory evoked potentials (BAEPs).

The medical records and BAEPs of 360 dogs, 6 cats and 11 ferrets referred in the period 1998-2007 for auditory evaluation were reviewed. Inclusion criteria were: the presence of unilateral or bilateral abnormalities in BAEPs consistent with partial or complete hearing loss. One hundred-twelve dogs, 6 cats and 4 ferrets met the inclusion criteria.

All animals were tested under sedation using auditory stimuli of intensities varying from 90 to 105 dB NHL. Bone stimuli were also used to identify conductive deafness. Tracings were recorded, amplified and averaged using standard methodologies. Auditory threshold was established when needed to confirm partial deafness. ICS deafness was the prevalent abnormality among dogs (94/112), most of these subjects were puppies of predisposed breeds. Forty-nine of these dogs were unilateral deaf, 45 bilateral deaf. In 20.2% of the dogs (18/112) an acquired form of hearing loss was found. Eleven of these subjects had ALS deafness (1 unilateral, 10 bilateral) and 7 had ALC deafness (4 unilateral, 3 bilateral). In 4 of the cats of this study a diagnosis of ICS deafness was made. Three of these cats were Norwegian Forest and 1 a white DSH (3 unilateral and 1 bilateral). The remaining 2 cats had ALC deafness (1 unilateral and 1 bilateral). All 4 deaf ferrets had an ICS form (2 unilateral and 2 bilateral).

Hereditary cochlear degeneration is common in subjects of predisposed breeds and generally associated with some pigmentation patterns. In the present study ALS hearing loss could be demonstrated only in dogs, and was generally a consequence of ototoxicity or presbycusis. ALC deafness is usually noted by owners when dramatic abnormalities of external/middle ear anatomy are present. In this study ALC hearing loss was associated with chronic otitis in dogs and inflammatory polyps in cats. More data are needed to better define the prevalence of different types of deafness in companion animals.