Abstracts : N°1, 2006; Tome 159

Toxicology of mycotoxins: hazards and risks in human and animal food

By P. Galtier, N. Loiseau, I.P. Oswald and O. Puel. *(lecture p. 5)*

Mycotoxins are secondary metabolites produced on plants either in the field or during storage. These toxins are found as natural contaminants on numerous foods and feeds of plant origin, such as cereals, fruits, nuts, almonds, grains, fodder, as well as processed foods and feeds using these ingredients. The toxicity of mycotoxins varies, ranging from hepatotoxic or even carcinogenic (aflatoxins) effects, to estrogenic (zearalenone), immunotoxic (patulin, trichothecenes, fumonisins), nephrotoxic (ochratoxin A) and neurotoxic (tremorgens) effects. Their toxicity can also be caused by the presence of mycotoxin residues in products deriving from animals fed with contaminated feedstuffs. The mycotoxic risk is difficult to evaluate, as mycotoxin are natural contaminants impossible to eliminate, fungal contaminations are difficult to control, and one mould may produce several toxins. Consequently, further research is needed to improve current knowledge on the toxicity of these products, particularly when various mycotoxins are combined, either together or with other toxins or pathogens.

Key words : mycotoxin, fungus, food, toxicity, residues.

Immunoprophylactic and immunotherapeutic prospects in prion diseases

By C. Carnaud and V. Bachy *(lecture p. 15)*

Prion diseases or transmissible subacute spongiform encephalopathies (TSSE) are fatal neurodegenerative conditions, for which there is so far no known treatment or prophylaxis. However, promising results achieved in Alzheimer's disease give some reason to hope that individuals with the disease, or at risk of developing the disease, might benefit from similar immunoprophylactic or immunotherapeutic approaches. This article reviews current knowledge on prion diseases. In the first section, we describe the known routes of prion invasion in the acquired forms of the disease, progressing from the periphery within the lymphoreticular system towards the central nervous system[1]. The second section focuses on the mediators of innate immunity mobilized within the central nervous system, and on their ambivalent role in the pathogenesis of the disease. The final section describes the vaccine approaches aimed at stimulating adaptive immunity and at creating, in association with the mediators of the innate immune system, a defence barrier against prions.

Key words**: **prion diseases, TSSE, PrP, innate immunity, glial cells, dendritic cells, adaptive immunity, helper T lymphocytes.

Radiation protection and the practice of veterinary medecine

By J. Doucet, H. Martinez, B. Pelletier and C. Roy *(communication p. 31)*

X-ray generators are used for radiodiagnosis in animals, the veterinary profession is also subject to the radiation protection legislation. The regulations include technical,

organisational, and administrative measures designed to protect all personnel working in the vicinity of these instruments. They also require the training of a person qualified in radiation protection and define his/her role. The recognition of a veterinary specificity compared to nuclear and industrial activities and human medicine is highlighted.

Key words: regulation, requirements, head of the organisation, competent person in radiation protection, doses, regulated areas, radiation protection equipment, training, information, controls, dosimetry, veterinary specificity.

Pathogens identified in calves with neonatal gastroenteritis in Vendée (France)

By J.-M. Quillet, S. Assié, M.O. De Beaulny, J. Lepeule and H. Seegers *(communication p.37)*

The object of this study was to describe the relative involvement of major pathogens in neonatal gastroenteritis in calves less than one month of age in Vendée (France). One to four samples of faeces from affected calves were collected in 127 farms serviced by 20 veterinary practices between 2002 and 2004. The study confirmed that several pathogens were involved in bovine neonatal gastroenteritis in Vendée. One of the four types of pathogenic E. coli *tested for was isolated in over 65% of the samples, and CS31A was the most prevalent type. Cryptosporidia were also identified frequently, often in large quantities. Rotaviruses were found more frequently than Coronaviruses. No coccidian oocysts were found in animals less than one month of age.*

Key words : calf, neonatal gastroenteritis, pathogens.

Physiology of ducks during force-feeding : study of hepatic steatosis

By G. Bénard, T. Bengone, D. Prehn, S. Durand, C. Labie and P. Bénard *(communication p.43)*

The objective of this study was to examine morphological and functional modifications in force-fed ducks (Cairina moschata x Anas platyrhynchos), subjected to 3 two-week cycles of force-feeding followed by four weeks of rest. The hepatomegaly following a two-week period of force-feeding was associated with reduced purification capabilities. However, if these animals were kept alive and fed normally[2], all morphological, chemical, biochemical and functional parameters, as well as the parameters of the BSP test, were similar to those measured in control animals. Therefore, the animals were able to withstand three consecutive cycles of force-feeding followed by a four-week period of rest, as no pathological signs were found, and all the measured or calculated parameters were not statistically different from those measured or calculated in control animals. Therefore, when carried out according to professional standards and on a small scale, force-feeding does not induce[3] diet-related pathological changes, as the steatosis is totally reversible. It is therefore possible to create acceptable conditions preserving the animals' welfare.

Key words : duck, force-feeding, foie gras, hepatic function, bromsulphalein (BSP), welfare.

Equine polysaccharide storage myopathy: retrospective study on 15 French cases between 2000 and 2005

By A. Giraudet *(communication p. 53)*

Equine polysaccharide storage myopathy was first described in the USA over 20 years ago. Histologically, the disease is characterized by amylase-resistant periodic acid Schiff's reagent-positive inclusions in the muscle cells. Like in other types of myositis, clinical signs are highly variable, ranging from asymptomatic carriage to persistent recumbency. The definitive diagnosis requires a muscle biopsy and histology with special staining (PAS). The first French case was described in 2002 in a draft mare. This retrospective study of 15 French cases shows that several French breeds are affected : Selle Français, Cob Normand and Merens. A genetic transmission is strongly suspected. Although nutritional management is possible, tolerance to the disease in hot blooded horses, generally on a high level of exercise, is moderate.

Key-words : horse, storage, polysaccharide, myopathy, Selle Français, Cob Normand, Merens.

Survey of digestive parasitism in dogs in a rural area of Gabon

By T. Normand, O. Boury, H. Dang, E. Leroy, G. Bourdoiseau and B. Davoust *(communication p.59)*

A parasitological study was carried out on 198 dogs living almost completely free in villages in the north-east of Gabon. Faeces samples were collected and analysed. The prevalence of digestive parasitism measured by microscopic coproscopy (flotation method) reached 91% (181/198). The vast majority of parasites thus isolated were ascarids (64% of samples), but they also included Ancylostoma (39%), Trichuris (54%) and Spirocerca (28%). Embryophores of Taenia sp. were found in 17 samples (9%).

Key words** : **intestinal parasitic infestation, dog, Gabon, coproscopy, zoonosis, ascarids.

Equine parasitic and fungal pneumonias : clinical aspects

By I. Desjardins, and J. Guillot *(communication p. 67)*

The prevalence and extent of parasitic and fungal pneumonias in horses remain unknown. Parascaris equorum is common among foals and young horses. As horses are only occasional hosts for Dictyocaulus arnfieldi, their contamination occurs when they are grazing together with donkeys. The severity of the respiratory signs in parasitic pneumonia is variable, and fecal examination is often inconclusive. Such infestations can be treated successfully with anthelmintics.

In France, fungal pneumonias are mainly caused by Aspergillus sp in adult horses and by Pneumocystis sp in foals. These pathogens generally develop in immunocompromised patients. Clinical signs are variable and rarely suggestive of fungal pneumonia. Despite treatment with antifungal drugs, the prognosis is often guarded.

***Key words: horse, pneumonia, parasites, fungi,* Parascaris equorum, Dictyocaulus arnfieldi, Pneumocystis, Aspergillus.**

Anthelmintic resistance in equine intestinal parasites

By F. Breugnet *(communication p.77)*

Chemoresistance is a growing phenomenon which currently affects several types of parasites. Its economical impact in ruminant herds is proven in the southern hemisphere as well as in some countries in the northern hemisphere, but the equine species seemed relatively unaffected until the 1980's. However, since then, cyathostomes resistance to anthelmintics has spread to such an extent that it has become a medical concern in most industrialised countries. Current control programs of small strongyles must take into account the risk of chemoresistance selection, to limit the extension of resistance to benzimidazoles and pyrantel, and prevent the development of a resistance to macrocyclic lactones. Recent publications have reported cases of probable cyathostomes resistance to avermectin and moxidectin. Up until now, the avermectin/milbemycin group was the only resistance-free anthelmintic class in horses. Preventing the extension of this resistance, such as seen with benzimidazoles, is of paramount importance. Worming programs must be part of a reasoned approach, taking into account epidemiological data as well as levels of infestation. Medical measures must be associated to preventive farming practices. Beside the cyathostomes, other equine parasites may become resistant to anthelmintic, especially ascarids (Parascaris equorum). Three recent publications reported a suspected Parascaris resistance to macrocyclic lactones.
After a synopsis on chemoresistance, the author describes the epidemiological situation of parasitic helminths in horses. The methods to prevent or at least slow down this phenomenon are discussed.

Key words : parasite, chemoresistance, equine, screening, prevention.

Equine dermatophytoses

By J. Guillot and R. Chermette *(communication p. 85)*

Dermatophytosis (ringworm, tinea) is a skin disease particularly common in horses. It is highly contagious, which explains the frequent outbreaks wherever horses are housed together (stud farms, riding schools, liveries…). Recent molecular analyses of dermatophytes have raised questions on the validity of certain dermatophyte species or varieties previously described as pathogenic for horses based on their phenotypic characteristics. Trichophyton equinum *is responsible for most of dermatophytose cases in horses. This species is very host-specific, and only exceptionally affects other animal species or man. The development of* Trichophyton equinum *in the skin's corneum stratum and hairs produces a dry form of ringworm, with moderate inflammation, alopecia, erythema, scaling and generally no pruritus. Clinical signs are highly variable and the risk of mistaking them for other dermatoses is not negligible. The diagnosis is based on anamnesis, accurate observation of the skin lesions, and the essential laboratory tests (direct examination and fungal culture). Clinical management should combine topical and systemic antifungal drugs. Environmental decontamination is also required, taking into account the spores' capacity for prolonged survival. Although vaccination is a very promising preventive measure, no vaccine against equine dermatophytoses is currently licensed for use in France.*

Key words: dermatophytosis, ringworm, horse, dermatology, prophylaxis.

H5N1 avian influenza: concerns over the vaccine in animals and man

By M.P. Durand *(short communication p. 93)*