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*One Health*

L'Animal et l'Homme, une même santé



#### 49. Infection with *Babesia canis* in dogs in the Algiers region: parasitological and serological study

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Canine Babesiosis is a vector disease transmitted by ticks of the *Ixodidae* family. The effects of infection in dogs can range from the subclinical to the lethal severe form. In this work the main objective is to make an original contribution to the knowledge of circulating species of *Babesia spp* in dogs in the region of Algiers as well as mechanisms and risk factors for their transmission. For this purpose, an epidemiological study was carried out on 189 blood samples taken from dogs from April 2015 to January 2016. The samples taken underwent parasitological and serological analyzes. The parasitological results of the Giemsa stained blood smears revealed the presence of two groups of parasites of the genus *Babesia*: Large *Babesia* (1.6%) and Small *Babesia* (11.64%). Serological analysis by the IFAT test at a dilution of 1/32 showed an overall seroprevalence with *Babesia canis* of 17.98% (95% CI 11.53-22.46). The distribution of the antibody titres for the positive samples showed that of the 34 positive sera with a titre  $\geq 1/32$ , 28 sera remained positive at a dilution of 1/64 (14.81%), 22 at a dilution of 1/128 (11.64%) and 15 sera remained positive at a dilution of 1/256 (7.93%). Although seroprevalence varied according to canine population (20% and 19.49% in pet dogs and canine pound dogs respectively and 6.66% to 0% in Farm dogs and Hunting dogs respectively), Statistical analysis showed no significant differences between populations. The antibody titers obtained after several dilutions showed that 22 canine pound dog sera remained positive at a dilution of 1/128 compared to pet dogs and farm dogs which ceased to be positive at the dilution of 1/64. The comparison between the two diagnostic methods showed a strong agreement between the parasitological examination by FS and the serological method by IFAT. However, IFAT was much more sensitive. The analysis of risk factors, which may influence *Babesia canis* seroprevalence, has shown the influence of age, tick presence and season. Finally, of the 242 ticks collected from a total of 59 dogs, only one tick species was identified, *Rhipicephalus sanguineus*. Furthermore, the identification of a new species *Rhipicephalus senegalensis* never recorded in North Africa is to be confirmed by the molecular tool.

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#### 50. Assessment of mitochondrial dysfunction by blood mononuclear cells analysis

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Mitochondrial dysfunction has emerged as a ubiquitous cause of disease in human and animals. Using respirometry, a so-called "mitochondrial syndrome" has been reported in equine atypical myopathy, which is characterized by a severe decrease of mitochondrial respiratory capacity in affected individuals. Up to now, respirometric studies have been conducted on skeletal muscles samples. However, the muscle biopsy procedure is rather invasive and therefore difficult to use in equine clinical routine. Despite the fact that peripheral blood mononuclear cells (PBMC) have been used in human medicine to assess mitochondrial function, there is only one study comparing PBMC and skeletal muscle oxidative capacity in animals, i.e. monkeys, so far. Therefore, the aim of this study was to test whether mitochondrial function could be assessed on equine blood cells with respirometry. Whole blood was collected in 9 ml EDTA tubes in four horses. Cells of interest (PBMC) were isolated with a density-separation medium (Lymphoprep™) following a standardized procedure. Electron paramagnetic resonance as well as the respirometric analysis were performed within the following 4 hours. With this isolation technique more than  $1 \times 10^6$  PBMC/ml of whole blood were obtained. Respirometric analysis with PBMC taken from the same horses indicated a lack of reproducibility. Therefore, a correlation between skeletal muscle fiber and PBMC mitochondrial bioenergetics in the equine species is, up to now, not possible to be established. The cause of variation within the same individual is still under examination.