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## First Serosurvey of *Besnoitia* spp. Infection in European Wild Ruminants in Spain



Bovine besnoitiosis is an emergent, chronic and debilitating disease caused by the parasite *Besnoitia besnoiti*. It affects cattle and wild European bovidae, but many aspects of its epidemiology are unknown. For the first time a study has been carried out of sera from wild ruminants in order to understand what role these species play in the life cycle of the parasite. The results show that red deer and roe deer have specific antibodies, which means they could be reservoirs of the parasite.

*Besnoitia besnoitii* is a parasite responsible for bovine besnoitiosis, an emergent, chronic and debilitating disease in Europe, traditionally endemic in some regions of France, Portugal and Spain. Cattle and wild bovids act as the intermediate host but many biological and epidemiological aspects of the disease remain unknown, including the complete life cycle, the definitive host and the role of wild animals as reservoirs for the infection.

Some authors have suggested that both domestic and wild cats could act as definitive hosts, but others do not support it. Therefore, the definitive host and the link between the domestic and sylvatic life cycle of the parasite remain to be elucidated. Thus, the aim of this research was to evaluate the presence of *Besnoitia* spp. in European wild ruminants, through a serological study, to elucidate the role of these animals in its life cycle.

Sera from red deer (*Cervus elaphus*) (n=734), roe deer (*Capreolus capreolus*) (n=124), chamois (*Rupicapra pyrenaica*) (n=170) and mouflon (*Ovis musimon*) (n=20) collected from different locations of Spain was analyzed. Cattle were present in all sampled areas and, interestingly, bovine besnoitiosis has been widely reported in some of them, like the Pyrenees and Central Spain.



Figura: Red deer with a offspring.

Sera samples were first examined with an Enzyme-Linked Immunosorbent Assay (ELISA). Sixty-one sera samples from red deer and 17 sera samples from roe deer were positive or doubtful by ELISA. All samples from mouflon were negative and 15 sera samples from chamois were considered doubtful. *B. besnoiti* exposure was only confirmed clearly by Western blot in one red deer and one roe deer from the Catalan Pyrenees where the disease is traditionally endemic.

This is the first serological report of *Besnoitia* spp. infection carried out in European wild ruminants and the results show that specific antibodies are present at least in red deer and roe deer. Thus, wild ruminants from endemic regions of bovine besnoitiosis should be further studied because they may be reservoirs of the parasite.

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## References

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