

## Detection of antibodies to *Neospora caninum* in the blood of European bison (*Bison bonasus bonasus* L.)

Władysław Cabaj, Bożena Moskwa, Katarzyna Pastusiak and Justyna Bień

Witold Stefański Institute of Parasitology of the Polish Academy of Sciences, 51/55 Twarda str., 00-818 Warszawa, Poland; Tel.: +48 22 620 62 26; fax: +48 22 620 62 27; E-mail: cabajw@twarda.pan.pl

### Abstract

*Neospora caninum* is a cyst-forming coccidian parasite that can infect and cause disease in a variety of mammals (Dubey 2003). Antibodies to *N. caninum* have been reported in wild ruminants, i.e. black- and white-tailed deer (*Odocoileus hemionus* and *Odocoileus virginianus*), roe deer (*Capreolus capreolus*), chamois (*Rupicapra rupicapra*), red deer (*Cervus elaphus*), eland (*Taurotragus oryx*), Thompson gazelle (*Gazella thompsoni*), impala (*Aepyceros melampus*), zebra (*Equus burchelli*), African buffalo (*Syncerus caffer*), water buffalo (*Bubalus bubalis*), alpacas (*Vicugna pacos*), llamas (*Lama lama*) and others wild canids. In Poland, the prevalence of antibodies to *Neospora caninum* was examined in sera of 320 European bison (*Bison bonasus bonasus* L.), of different age and sex, which lived in free or Polish breeding areas and were shot during 1984-2003. Positive antibody responses were found in 23 bison (prevalence 7,3%) (Cabaj et al. 2005).

In 2004 and 2005 blood sera from 41 bison were collected; in Forest Białowieża, in Forest Borecka (North-East part of Poland) and from North-East part of Slovak Republic where in 2004 a new free-living herd from animals originated from Italy and the Netherlands was introduced. All sera were analyzed for presence of antibodies to *N. caninum* using an enzyme-linked immunoassay (ELISA), according to the manufacturer's instruction (IDEXX Laboratories Inc., Westbrook, ME, USA) and using an automated plate reader EL\*800, Bio-tek, Instruments Inc.

Positive antibody response was found in 11 bison (prevalence 26.8%). Additionally, all positive sera were tested by Western blot to confirm the ELISA results. The Western blot results confirmed the presence of antibodies to *Neospora* tachyzoites antigens in all 11 tested sera. The antibodies were detected against a wide range of NC-1 tachyzoites antigens. The antibody responses were directed against proteins at: 9.5, 17, 21, 27, 31, 36.5, 38, 40, 43, 47, 48.5, 53.5 and 58 kDa. The most intense bands had molecular weights of 9.5, 17, 27 and 58 kDa.

Our results strongly support the presence of *N. caninum* in European bison living in Poland and also in animals from Denmark, Italy and the Netherlands introduced to free-living herds, to improve their genetically background. Our results suggest that a sylvatic cycle of *N. caninum* may exist, but further studies are needed to evaluate the existence of a sylvatic cycle of *N. caninum*.

Additionally, the effect of the infection on the health status and on conservation programme of the European bison, should be taken under consideration too, according to fact that *N. caninum* is one of the most important cause of abortion in cattle worldwide.

### References

- Dubey J.P. 2003. Review of *Neospora caninum* and neosporosis in animals. *Korean Journal of Parasitology* 41: 1-16.
- Cabaj W., Moskwa B., Pastusiak K., Gill J. 2005. Antibodies to *Neospora caninum* in the blood of European bison (*Bison bonasus bonasus* L.) living in Poland. *Veterinary Parasitology* 128: 163-168.