

## A novel *Giardia intestinalis* assemblage A genotype in red deer (*Cervus elaphus*), Poland

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Protozoan parasites of the *Giardia* genus infect many species of vertebrates. The role of animals in transmitting *Giardia* to humans remains unclear, however, assemblages A and B have been found both in humans and in numerous species of mammals. Although *Giardia* infection in wild, farmed and captive cervids has been reported, there is little molecular evidence to support the role played by wild cervids as a potential source of *Giardia* infection to humans and other animals.

The present study was performed to examine the prevalence of *Giardia* spp. in wild cervids in western Poland and to identify the species and genotypes using molecular methods. Twenty four fecal samples were collected from 3 species of cervids during the managed animal observation and tracing sessions (16 samples from red deer, 5 from roe deer, and 3 from fallow deer). Moreover, 16 fecal samples from roe deer were taken directly from the colon of hunter-killed animals within selective shootings. Wet and stained fecal smears were microscopically examined. *Giardia* cysts were detected only in one specimen obtained from wild red deer. The cysts were purified using the sucrose gradient technique. Using an *in vitro* excystation procedure the cysts were inoculated on BI-S-33 medium. Twelve days after inoculation, a monolayer of the trophozoites was observed in axenic culture. Total DNA was extracted from *Giardia* cysts directly from fecal sample as well as from axenized trophozoites. DNA was amplified using primers directed to the  $\beta$ -giardin gene and amplicons were sequenced.

Sequencing of the PCR products revealed that the *Giardia* isolate from red deer belonged to assemblage A. The sequences of the *G. intestinalis* isolate obtained from red deer were 100% identical with sequences obtained from free-ranging moose (DQ648777) and fallow deer (DQ650649). The results suggest that the *Giardia* isolate obtained from red deer is adapted to cervids since this genotype has never been identified in humans or livestock artiodactyles to date.