

Occurrence of intestinal microparasites in small rodents

**Agnieszka Perec-Matysiak, Kinga Leśniańska, Katarzyna Buńkowska-Gawlik,
Joanna Hildebrand**

Department of Parasitology, Institute of Genetics and Microbiology, Wrocław University, Przybyszewskiego 63,
51-148 Wrocław, Poland

Corresponding Author: Agnieszka Perec-Matysiak; email: agnieszka.perec-matysiak@uwr.edu.pl

The intestinal microparasites of the Microsporidia and *Cryptosporidium* spp. are opportunistic pathogens that infect humans and a wide range of animals, including livestock, companion animals or wildlife. Of these potential sources of pathogens, wildlife has received the least attention and the risk posed by these populations to public health is not fully understood. Among the range of known hosts, rodents are considered to be a significant risk factor for public health, acting as a reservoir of pathogens in the environment by contributing to food, water and soil contamination.

The aim of this study was to determine the presence of *Enterocytozoon bieneusi*, *Cryptosporidium* spp. and *Encephalitozoon* spp. in reservoir hosts. Rodents (n=294) represented by *Apodemus agrarius*, *A. flavicollis* and *Myodes glareolus* were captured in live traps in four localities of SW Poland during 2010-2013. Fecal samples were collected from the colons of rodents. PCR methods were used to detect the DNA of examined intestinal microparasites. The choice of genetic markers and primers was based on literature data (18S rRNA, ITS rRNA, COWP and actin genes). Selected PCR positive products were purified and sequenced to confirm the presence of parasites.

All obtained samples were simultaneously tested with the use of all genetic markers.

The DNA of *Cryptosporidium* spp. (29.3%), *E. bieneusi* (40.8%) and *Encephalitozoon* spp. (9.5%) was detected in all three of the rodent species trapped from each study site. The co-occurrence of all detected pathogens was observed in 1.4% of examined fecal samples, while the co-occurrence of two was noted in 16.0%. Co-occurrence of *Cryptosporidium* spp. and *E. bieneusi* was most common and was recorded in 12.0% of samples. Infection with a single pathogen was detected in 44.4% of rodents. Our findings demonstrate that intestinal protozoan and fungal pathogens are prevalent and co-occur among wild living rodents in SW Poland. These rodents can maintain the microparasites in the environment and can be a source of environmental contamination with species/genotypes being potentially hazardous for animal and human health.