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### Occurrence of *Giardia* and *Cryptosporidium* in dogs

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#### Objectives of the Study::

*Giardia* and *Cryptosporidium* are intestinal protozoan parasites of animals and humans and depending on the virulence of particular isolate and the immunological status of the hosts cause asymptomatic even severe intestinal disease. *Cryptosporidium* infections are common in humans and calves, but also occur in dogs, cats, farm animals and wildlife. *Giardia* infections affect humans and livestock, as well as dogs, cats and numerous species of wild mammals (Fayer, 2004).

Currently, 13 species of *Cryptosporidium* spp. are recognised. Dogs can be naturally infected by *Cryptosporidium canis*, *C. parvum* and *C. meleagridis* (Xiao et al., 2004). *Cryptosporidiosis* in dogs is usually asymptomatic, but may cause severe diarrhoea, malabsorption and weight loss.

*Giardia intestinalis* is known to infect multiple host species, including humans. Molecular genetic studies have demonstrated that *G. intestinalis* is a species complex comprising at least 7 major genotypes/assemblages (Thompson, 2004). Most of these assemblages appear to have distinct host associations. Assemblages A, B, C and D may occur in dogs. Traub et al. (2005) found genetically identical isolates in a dog and two humans in the same household, indicating zoonotic transmission between humans and dogs. The majority of *Giardia* infections in dogs are asymptomatic, but some infected dogs may suffer from acute or chronic diarrhoea, weight loss, poor weight gain despite a normal appetite, and, less commonly, vomiting and lethargy (Anderson et al., 2004).

Preliminary results of our study emphasize the prevalence of *Cryptosporidium* and *Giardia* species in two age categories: young (< 7 months old) and adult (> 7 months old) dogs in Eastern Slovakia.

#### Materials and Methods:

125 dogs were examined: 55 young dogs younger than 7 months and 73 adult dogs older than 7 months. 76 of dogs originated from the animal shelter. The faecal samples were analysed by a 33% zinc sulphate flotation concentration method (*Giardia*) and modified Kinyoun's acid-fast stain (*Cryptosporidium*) (Garcia and Bruckner, 1997), and examined using light microscope (Olympus BX41) at 400 x magnifications. Intensity of infection was classified by semi-quantitative method, being graded as: low, 1+ when < 5 cysts/oocysts on average were present in each of 20 fields of view, mild, as 2+ with 5–10 cysts/oocysts on average were present in each of 20 fields of view, or high, as 3+ with > 10 cysts/oocysts on average were present in each of 20 fields of view (Hammes et al., 2007).

#### Results:

Both parasites were common in examined dogs, with *Giardia* more prevalent than *Cryptosporidium*.

Prevalence of both parasites was found to be influenced by age: in 55 examined young dogs (< 7 months old) reach the ratio of 76.4 % (42/55), in group of 73 adult dogs (> 7 months old) was infected 38.4 % (28/73) individuals. *Giardia* spp. prevalence ranged between 69.1 % (young dogs) and 36.9 % (adult dogs), *Cryptosporidium* spp. prevalence was at interval between 7.2 % (young dogs) and 1.4 % (adult dogs). Among young dogs, mixed infection with both species was observed in 3.6 % of animals.

Intensity of infection was evaluated by semi-quantitative method. *Giardia* spp. infection was found in high intensity (3+ and more) in 47.4 % of young dogs, low and mild infection was ascertained both in 26.3 % of specimen. *Cryptosporidium* spp. was found in 7.2 % of young dogs in form of mild infection. In 62.9 % of adult dogs, *Giardia* spp. infection was in low intensity, and both mild (2+) and high (3+) intensity of infection was present in 18.5 % of adult dogs. *Cryptosporidium* spp. in adult dogs was detected in 1 individual in low intensity of infection (1+).

#### Conclusions:

Both parasites are common in dogs from Slovakia, with *Giardia* spp. being more prevalent than *Cryptosporidium* spp. The risk this represent to animal and human health cannot be ignored due to zoonotic potential of both parasites. Therefore the treatment of young pets infected with *Giardia* spp. should be recommended and preventive treatment for all dogs less than one year of age and for recently adopted dogs is to consider. Effective preventive medication against *Cryptosporidium* spp. is impossible and thus the hygiene and sanitary measures are in particular of importance.

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#### Bibliography:

Anderson KA, Brooks AS, Morrison AL, Reid-Smith RJ, Wayne Martin S, Benn DM, Peregrine AS: Impact

- of Giardia vaccination on asymptomatic Giardia infections in dogs at a research facility. *Can Vet J.* 2004; 45:924–930
- Fayer R: Cryptosporidium: a water-borne zoonotic parasite. *Vet Parasitol.* 2004; 126: 37–56
- Hamnes IS, Gjerde BK, Robertson LJ: A longitudinal study on the occurrence of Cryptosporidium and Giardia in dogs during their first year of life. *Acta Vet Scand.* 2007, 49: 22–36
- Thompson RCA, Monis PT: Variation in Giardia: implications for taxonomy and epidemiology. *Adv Parasitol* 2004, 58:69-137.
- Thompson RCA: The zoonotic significance and molecular epidemiology of Giardia and giardiasis. *Vet Parasitol.* 2004; 126: 15–35
- Traub RJ, Robertson ID, Irwin PJ, Mencke N, Thompson RCA: Canine gastrointestinal parasitic zoonoses in India. *Trends Parasitol.* 2005; 21: 42–48
- Xiao L, Fayer R, Ryan U, Upton SJ: Cryptosporidium taxonomy: recent advances and implications for public health. *Clin Microbiol Rev* 2004, 17: 72–97