PREVALENCE OF GASTROINTESTINAL PARASITES OF WATER BUFFALOES RAISED IN THE NOTECKA FOREST REGION (POLAND)

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Abstract

The aim of this study was to determine the prevalence of infection with gastrointestinal parasites in water buffaloes raised in the Notecka Forest region in the Wielkopolska Province (Poland). Coproscopic examinations were performed between January and June 2009. The mean prevalence of gastrointestinal parasites in the water buffalo herd was 44%. Gastrointestinal nematodes (10%) and flukes (Fasciola hepatica - 32% and Paramphistomum cervi - 11%) were found in the examined animals. The high prevalence of infection with gastrointestinal parasites was caused by the lack of an appropriate helminth control programme. Despite the fact that they are raised on marshy meadows, where good conditions for parasites' development exist, these animals were not systematically dewormed. It is necessary to devise a helminth control programme for the studied water buffalo herd.

Key words: water buffaloes, gastrointestinal parasites, Poland.

Material and Methods

Coproscopic examinations were performed between January and June 2009 in the only water...
were reported by Cringoli gastrointestinal parasites in water buffaloes was 4.4% (Fig. 1). In the examined animals, gastrointestinal nematodes and trematodes (7.1%). However, Cringoli et al. (6) recorded higher prevalence of infection with Paramphistomidae trematodes (2.1%) and F. hepatica (1.3%).

In the presented study, the highest prevalence of infection with gastrointestinal nematodes in water buffaloes was found in May (22.22%), whereas the lowest one in January (3.13%). The crucial factor in the biology of gastrointestinal nematodes in ruminants is the phenomenon of “larvae development inhibition”.

### Table 1

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<thead>
<tr>
<th>Months</th>
<th>Number of examined buffaloes</th>
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<td>January</td>
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It is worth noting that the prevalence of infection with F. hepatica in water buffaloes (32%) was almost two times lower than that demonstrated by Iqbal et al. (14) for the Farooqa region in Pakistan. The high prevalence of Fasciola hepatica infection in water buffaloes was reported also by Iqbal et al. (14) in the Shorkot (46.23%) and Mor Mandi (40%) areas. According to these authors, the reason for so high prevalence of this parasite infection in animals was the presence of marshy areas, frequent lying of water, and lenient grazing.

In the study by Liu et al. (21), Fasciola hepatica was found in 44.7% of water buffaloes in the Hunan province in China. Racipori et al. (28) also found the high prevalence of infection with Fasciola hepatica in Argentina in the Corrientes province. The mean prevalence of the infection among buffaloes increased by 28.5% between 2000 and 2006.

Different results were obtained by Condoleo et al. (5) in central Italy, where the mean prevalence of Fasciola hepatica in buffaloes was only 7.1%, whereas Cringoli et al. (6) found lower prevalence of the infection, which amounted to 1.3%.

In our study, the mean prevalence of Paramphistomum cervi infection in water buffaloes was 11% (Fig. 1) and it was almost two times higher than that found by Liu et al. (21) in the Hunan province in China (4.3%). However, Condoleo et al. (5) observed the presence of trematodes from the genus Paramphistomidae in 7.1% of buffaloes. Much lower prevalence of infection in the Lazio region in Italy (2.1%) was reported by Cringoli et al. (6).

Our results showed that the mean prevalence of infection with gastrointestinal nematodes in water buffaloes was lower than that with F. hepatica and P. cervi (Fig. 1). Condoleo et al. (5) reported that infection with gastrointestinal nematodes in water buffaloes was by 50% lower (3.1%) than that with F. hepatica (7.1%) and trematodes from the genus Paramphistomidae (7.1%). However, Cringoli et al. (6) recorded higher prevalence of infection with gastrointestinal nematodes in water buffaloes (5.4%) than that with Paramphistomidae trematodes (2.1%) and F. hepatica (1.3%).

In the presented study, the highest prevalence of infection with gastrointestinal nematodes in water buffaloes was found in May (22.22%), whereas the lowest one in January (3.13%). The crucial factor in the biology of gastrointestinal nematodes in ruminants is the phenomenon of “larvae development inhibition”.

### Results and Discussion

The mean prevalence of infection with gastrointestinal parasites in water buffaloes was 44% (Fig. 1). In the examined animals, gastrointestinal nematodes and trematodes (Fasciola hepatica and Paramphistomum cervi) were found. Similar findings were reported by Cringoli et al. (6) for the water buffalo farms in Italy. These authors recorded gastrointestinal nematodes in 33.1% of the examined farms. They also found the presence of Rother parasites such as: Fasciola hepatica (7.1%), Calicophoron daubneyi (7.1%), Strongyloides sp. (3.1%), Dicrocoelium dendriticum (2.4%), and Montezia sp. (2.4%).

Our results showed that the mean prevalence of infection with gastrointestinal nematodes in water buffaloes was 10% (Fig. 1). The mean prevalence in the buffaloes was almost three times higher than the value obtained by Condoleo et al. (5), as well as two times higher in comparison with the study by Cringoli et al. (6) on water buffaloes from Italy. Liver fluke disease (fasciolosis) caused by Fasciola hepatica mainly affects domestic and wild ruminants. The symptoms and course of this disease depend on the age of animals, their immunity, nutritional status, management conditions, and the number of liver flukes that attacked the animal (12, 17, 18, 23, 29).

It is worth noting that the prevalence of infection with F. hepatica in water buffaloes (about 20 g) were collected into polyethylene bags and, if necessary, stored in refrigerator at 4–6 °C for up to 2 d.

The prevalence of infections with gastrointestinal nematodes was determined by coproscopic examinations using the Willis-Schlaff method. The faeces pellet of the size of a hazelnut was poured over with the saturated solution of sodium chloride, whereas the decantation method according to Zarnowski and Jostowa (30) was used for the detection of trematode eggs. Approx. 3 g sample of faeces was used for this analysis.

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It is associated with the fact that the larvae of nematodes, which entered the host at the end of the summer and in autumn do not reach maturity but penetrate into the intestinal wall and there, as instars (after third cord), stay until spring. In Poland, the issue of the larvae development inhibition also attracted attention of other authors (17, 19). In Europe, studies by Daetz et al. (7) and Lamothe et al. (20), who showed an increased intensity of infections with gastrointestinal nematodes during the pasture period in examined cattle deserve attention. In the case of Fasciola hepatica, the lowest prevalence of infection was also noted in January (15.62%). However, the highest one was found in March (52.3%). Under our climatic conditions, mass infections with Fasciola hepatica most often take place on pastures. The intensity of infection is determined by the appearance of snails hatching from cocoons laid by the great pond snails after wintering.

In the case of Paramphistomum cervi, the highest prevalence of infection was observed in June (20.51%). In the analysed water buffalo herd, there were no Paramphistomum cervi eggs in April (Fig. 2). Pilarczyk et al. (25, 26) showed that the course of parasitic invasion depends, first of all, on climatic and environmental conditions. The results obtained in our study confirm the observations made by other authors (3, 4, 10, 11, 24, 25). In Poland, Paramphistomum cervi can occasionally be found in cattle. The research on the extensiveness of infection with this parasite in cattle in an annual cycle has not been conducted so far.

The high prevalence of infection with gastrointestinal parasites of water buffaloes kept in the Notecka Forest region is caused by the lack of appropriate helminth control programme. Despite the fact that these animals are raised on marshy pasture, where good conditions for parasites’ development exist,
they were not systematically dewormed. Every breeder should perform periodic examinations for the presence of parasites in herds in order to avoid economic losses associated with parasitic invasions. The positive result of this study should be an indication for devising an appropriate helminth control programme.

References