

Short notes

Coccidiosis – a problem in backyard rabbitries

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ABSTRACT. This paper focuses on parasites of the genus *Eimeria* in rabbits kept in two backyard farms – from Poland (herd A) and Ukraine (herd B). The concentration McMaster technique and sporulation was applied to determine the level of infection, as well as to identify the species composition. The *Eimeria* sp. oocysts were present in all collected samples (prevalence = 100%), and four to nine coccidian species were identified in the herd A and B, respectively. *Eimeria media* was the most common species, and the presence of the most pathogenic *E. intestinalis* and *E. flavescens* was observed in both studied rabbitries. The results obtained suggest that coccidiosis may cause a serious risk for rabbits kept in backyard farms, therefore prevention guidelines in relation to the backyard breeding are crucial to be developed.

Keywords: *Eimeria* sp., coccidiosis, rabbits, backyard farms

Introduction

Coccidiosis caused by *Eimeria* sp. is one of the most economically important issue in the rabbit management. There are two types of this protozoan disease – intestinal (caused by ten species, i.e. *E. coecicola*, *E. exigua*, *E. flavescens*, *E. intestinalis*, *E. irresidua*, *E. magna*, *E. media*, *E. perforans*, *E. piriformis*, and *E. vej dovskyi*), and hepatic one (induced by *E. stiedai*) [1]. Within the species mentioned, *E. intestinalis* and *E. flavescens* are considered to be the most pathogenic, whereas the pathogenicity of *E. stiedai* depends strictly on the intensity of infection. Other species are considered to be low or non-pathogenic.

Due to the stated differences in the individual species pathogenicity, an appropriate diagnosis of coccidiosis in rabbits is crucial, and should cover not only the results of coproscopical quantitative methods, but also the accurate species identification.

Prevention, control and treatment methods of coccidian infections are well developed in relation to the farmed rabbits [2–5], whereas those kept in the backyard farms are considered to be only

slightly threatened. Since the issue is so far only partially described [6], the aim of the present study was to assess the level of infection, with particular attention to determine differences in the species composition of coccidia occurring in backyard rabbitries in Poland and Ukraine.

Materials and Methods

The studied rabbit herds were located in the region of Kraków, Poland (herd A), and Kamieniec Podolski, Ukraine (herd B). Animals were kept outdoor in wooden cages (from 4 to 8 rabbits per cage), and fed with a standard complete diet in granular form. In herd A the rabbits were 3,5 months of age, whereas in herd B were aged 2–11 months.

Overall, 26 and 38 bulk fecal samples were collected in February and March 2017, from herd A and B, respectively, and then analyzed using the concentration McMaster technique [7]. The isolated oocysts were sporulated at oxidizing sporulation medium (2% K₂Cr₂O₇) in order to identify the species composition. The distinction to the species was based on the morphology and size of oocysts

and sporocysts [8]. To compare the intensity of infection (OPG) among herds the Quantitative Parasitology Web software was used [9].

Results

The coprological analysis revealed the presence of coccidian oocysts from *Eimeria* genus in all collected samples (prevalence = 100%). The species composition differed in herd A and B, however, the most pathogenic species (i.e. *E. intestinalis* or *E. flavescens*) were stated in both. The analysis of mean intensity of infection among herds shown no statistical differences ($p = 0.38$).

The mean intensity of infection in the bulk samples from herd A varied from 4224 to 17 616 oocysts per gram of feces (OPG), with an overall mean value equal to 10 299 OPG. Four coccidian species were identified by means of the sporulation, i.e. *Eimeria media*, *E. stiedai*, *E. coecicola*, and *E. flavescens* with 48.5%, 27.3%, 12.1%, and 12.1% contribution in all stated oocysts, respectively.

The mean intensity of infection in herd B was 2243 OPG (from 240 up to 13280 OPG). Overall, nine coccidian species were stated, i.e. *Eimeria media*, *E. coecicola*, *E. magna*, *E. piriformis*, *E. stiedai*, *E. irresidua*, *E. exigua*, *E. intestinalis*, and *E. perforans* with 25.1%, 14.2%, 13.1%, 11.2%, 10.3%, 9.6%, 8.1%, 6.3%, and 2.1%, contribution in all stated oocysts, respectively.

Discussion

In comparison with the research conducted likewise in backyard rabbits farming [6,10], the results obtained in the current work indicate the lower intensity of infection, however still relatively high. Compared to the results of other Polish authors, the number of *Eimeria* species found was lower – four species in this study (herd A) and 9–10 in others [2,3,5,10]. In turn, in the investigated Ukrainian herd (B), 9 species of coccidia were found, while other authors found from 4 to 5 species [11–13].

Since – apart from the hepatic *Eimeria stiedai* – also the most pathogenic intestinal *E. intestinalis* or *E. flavescens* species in the backyard rabbitries were noted, the potential emergence of clinical coccidiosis, with associated economic losses, have been confirmed there. Therefore, the prevention guidelines in relation to backyard rabbitries are essential to be developed. It may include ad hoc

administration of anticoccidial drugs from various chemical groups, such as toltrazuril and sulfachloropyrazine during the weaning of young rabbits [5], or the application of some already developed herbal supplements [14–15] throughout the rearing period.

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