

Validation of use and the efficacy of pyrantelium against the nematode in horses – the initial research

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In Poland, an increase in the horse population has been observed in recent years, mainly related to recreation and hypotherapy. For years, the subject of elimination parasites in horses has been a big challenge for veterinarians and farmers (breeders). The horses are very often treated accidentally because there is no specific data for de-worming. The therapy used is not always based on the knowledge of the infective condition in individual stables and not including different system of maintenance and use of horses.

Previous research presented the prevalence of parasites in horses in the south-eastern region, including account of the horses' origin and the maintenance system. In Poland, to control parasites in horses there are few substances registered. One of them is ivermectin (IVM), which belongs to the macrocyclic lactones. In the earlier studies we found a limited therapeutic effect in the elimination of *Parascaris* spp. Looking for other solutions, we analyzed the effect of the substance belonging to the tetrahydropyrimidines group. Pyrantelium is rarely used for horses, because has limited effectiveness, especially against nematodes larval, in particular for migrating larvae and located in worm nodules. Pyrantelium is recommended mainly for the control of adult nematodes. The anthelmintic activity of this group of drugs, as cholinergic antagonists, is based on neurotransmission disturbance leading to paralysis of the parasite.

The aim of this study was to examine validation of use and the efficacy of pyrantelium against the nematode in horses.

The study was conducted in farms where before was found resistance of ivermectin in *Parascaris* species infected horses. The study included horses of both sexes and ages between 1 and 2 years, coming from pastures system (horses used the pastures). Samples of faeces were collected in 2020 on April (29 horses) and at the turn of August and September (34 horses)

Faecal samples were collected from the rectum of each animal or from the environment straight after defecation. Samples were collected on 1 day prior and 2 weeks after de-worming. Each sample was examined macro- and microscopically (McMaster and sedimentation-flotation methods). The macroscopic examination consisted in careful examination of the samples looking for parasites or their fragments. Faecal Egg Counts (FEC) were measured with the McMaster method (sucrose-NaCl supersaturated solution with a specific gravity of 1.25) with a minimum detection limit of 50 eggs/g (Zajac and Conboy 2012). The sedimentation-flotation method was used in order to more precisely define the parasitofauna. Only horses with EPG > 200 were qualified for further research. In order to compare the effect of pyrantelium in different seasons of the year, the research was limited only to horses that were tested in both periods (22 horses).

Spring period (April). Before anthelmintic treatment we found only Strongyloidea eggs in the all horses examined. The prevalence was 100%. The average EPG (eggs per gram) of Strongyloidea was 1,291.38 and was different of individual horses. After de-worming, the average EPG were 414, and

in individual horses were most often low. In the spring, we found a limited effectiveness of pyrantelium to strongylide, as FECRT was equal to 72.36%. Additionally, in 3 horses were found few *Parascaris* spp. eggs

Summer period (August/September). Before deworming, the most prevalent parasite species was represented by Strongylidae family (85.29%). Other parasite species identified were *Parascaris* spp. (44.12%). For strongyle EPG was 2,150 and was different in individual horses. For *Parascaris* spp.,

the average EPG was equal to 1510. Most of the horses had low intensity of infection. After deworming, only 2 horses were infected with strongyle and EPG was equal to 100, and 4 horses of *Parascaris* spp. In the fall, the reduction in the number of eggs in the faeces (FECRT) was 99.68%.

In the case of strongyle infections in horses, a significantly higher number of faecal eggs (EPG) was found during summer than during spring months.