

## CYATHOSTOMINS SPECIES IDENTIFIED AFTER DEWORMING OF HORSES IN WESTERN ROMANIA

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### **Abstract**

*The study was conducted during October 2013 - February 2014 on twelve horses from several cities from Arad County, Romania. The aim was to identify the species of small strongyle nematodes (cyathostomin spp.) expelled after deworming of horses using fenbendazole 30 % at a dose of 10 mg per body weight. For this study only the horses with 250 strongyle eggs per gram of faeces or more have been selected. The faeces were collected 24, 36, 48 hours after the treatment for the identification of the strongyles expelled. All helminths expelled were collected in physiological serum, washed and fixed in lactophenol for 2 days for clarification of the anatomical structures and maintained in 70 % ethanol for later identification. All of the helminths expelled were small strongyles (cyathostomin spp.) and identified by morphological criteria proposed by Tolliver, 2000 and Lichtenfels et al., 2008. The cyathostomins species found were: *Cyathostomum catinatum*, *Cyathostomum pateratum*, *Cylicocycclus nassatus*, *Cylicostephanus longibursatus*, *Cylicostephanus goldi* and *Petrovinema poculatus**

**Key words:** small strongyles, cyathostomins, horses, Romania.

### **INTRODUCTION**

Equine strongyles are belonging to the phylum *Nematoda*, family *Strongylidae*, separated in two subfamilies: Strongylinae-large strongyles and *Cyathostominae*-small strongyles, also known as cyathostomins.

Cyathostomins are considered to be the most pathogenic group of strongyles in equids worldwide, due to the decline of large strongyles-*Strongylus* spp. (Herd, 1990; Love et al., 1999; Lyons et al., 1999, 2000; Kaplan, 2004). The disease is associated with colics, lower rates of performance, rough hair coat, but more important is the syndrome known as "larval cyathostominosis", produced by the synchronous reactivation of larval stages encysted in the intestinal wall. This syndrome is characterised by weight loss, severe diarrhoea, generalised oedema and loss of proteins (Love and McKeand, 1997).

The aim of this study was to identify the cyathostomin spp. expelled after deworming of horses, to find out which of the species parasitize in western Romania.

### **MATERIALS AND METHODS**

The study was performed from October 2013 to February 2014, on 12 horses from several cities from Arad County. First of all, the faeces samples were collected in plastic bags, labelled for identification. Were performed a qualitative flotation (Willis) method to determine the parasite burden and quantitative (McMaster) method, to determine the number of eggs per gram of faeces. Only strongyle eggs were found by Willis method. The horses with 250 strongyle eggs per gram of faeces or more have been selected for this study. They were dewormed with fenbendazole 30 %, at a dose of 10 mg per body weight and fresh samples of faeces (200g) were collected 24, 36, 48 hours after the treatment. The horses were treated with fenbendazole other times in their life, but none of them had been dewormed at least 12 weeks prior to the study.

The horses were 1-20 years old and from various breeds from draft horse to light draft horse. Each faecal sample was carefully

examined to find the helminths expelled. Then the parasites were collected in Petri dishes with physiological serum, washed and fixed in lactophenol for two days for clarification of the anatomical structures and maintained in 70 % ethanol for later identification. The parasites were identified under a compound microscope 10x and 40x objectives by morphological criteria (Tolliver, 2000; Lichtenfels et al., 2008).

## RESULTS AND DISCUSSIONS

The total number of strongylid parasites collected after deworming was 2723 and 680 strongyles, randomly choose, were identified. From 70 to 388 strongyles per horse were collected. All the helminths were small strongyles from the subfamily *Cyathostominae*, genera *Cyathostomum* (2 species), *Cylicostephanus* (2), *Cylicocyclus* (1) and *Petrovinema* (1). The majority of the cyathostomins expelled were found in faeces 24-36 hours after treatment (Figure 1).

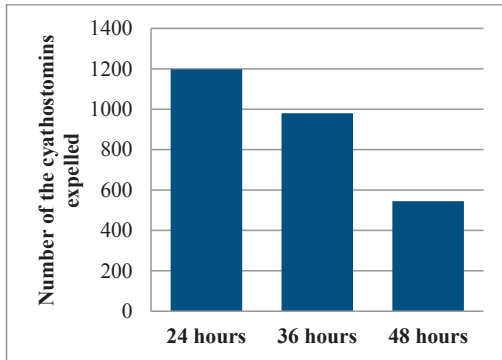


Figure 1. The mean number of cyathostomins expelled in horse faeces after 24, 36 and 48 hours

The species identified in this study were: *Cyathostomum catinatum*, *Cylicostephanus longibursatus*, *Cyathostomum pateratum*, *Cylicocyclus nassatus*, *Cylicostephanus goldi* and *Petrovinema poculatus*.

The small strongyles were identified based on morphological structures of the head and tail.

*Cyathostomum catinatum* (Figures 2, 3, 4) was found in every horse and the species *Cylicostephanus goldi* and *Petrovinema poculatus* were found in two horses.

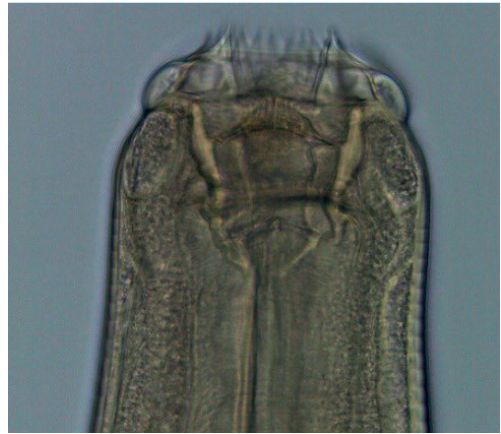


Figure 2. *Cyathostomum catinatum*, head.



Figure 3. *Cyathostomum catinatum*, male tail.



Figure 4. *Cyathostomum catinatum*, female tail.

The prevalence of cyathostomins species expelled in faeces from 12 horses examined is showed in Table 1.

Table 1. The prevalence of cyathostomin spp. expelled in faeces.

Species	Prevalence (%)
<i>Cyathostomum catinatum</i>	100
<i>Cyathostomum pateratum</i>	41.6
<i>Cylicostephanus longibursatus</i>	83.3
<i>Cylicostephanus goldi</i>	16.6
<i>Cylicocyclus nassatus</i>	75
<i>Petrovinema poculatus</i>	16.6

Similar results were found by Kuzmina et al., 2005, in the first 24-36 hours after deworming, they have registered the highest number of strongylids expelled in faeces and 60 hours after treatment the majority of worms expelled were gastric bots (*Gasterophilus* spp.).

The prevalence found in this study was almost the same with that registered in Ukraine after deworming of brood horses, in some species *Cyathostomum catinatum* (100 %), *Cyathostomum pateratum* (45.5 %) and a higher prevalence in the species: *Cylicostephanus longibursatus* (93.2 %), *Cylicocyclus nassatus* (100 %), *Cylicostephanus goldi* (75 %) and *Petrovinema poculatus* (27.3 %).

In Romania, Morariu et al., 2007, have identified 14 species of cyathostomins and six species *Cyathostomum catinatum*, *Cylicocyclus brevicapsulatus*, *Cylicocyclus insigne*, *Cyathostomum pateratum*, *Cylicocyclus nassatus* and *Oesophagodontus robustus* had 67.73 %. In our study the following species: *Cyathostomum tetracanthum*, *Cylicocyclus brevicapsulatus*, *C. insigne*, *C. leptostomum*, *C. radiates*, *Cylicostephanus calicatus*, *Gyalocephalus capitatus* and *Parapoteriostomum mettami* found in Bazosul Nou, Timis County, have not been identified. Except the species *C. brevicapsulatus* and *C. insigne* the other species were rarely found also in the study conducted by Morariu et al.. In our study the number of eggs per gram of faeces (EPG) was lower than the EPG registered in horses from Bazosul Nou.

Traversa et al., 2010 have identified the most prevalent five species: *Cylicocyclus nassatus* (87.2 %), *Cylicostephanus longibursatus* (86.2 %), *Cyathostomum catinatum* (81.3 %), *Cylicostephanus goldi* (78.4 %) and

*Cyathostomum pateratum* (75.5 %) from Italy, United Kingdom and Germany. In Italy *Cyathostomum pateratum* was equally prevalent with *Cylicocyclus insigne*; in United Kingdom, *C. insigne* had the same prevalence with *C. longibursatus* and *C. ashworthi* had a higher prevalence than *C. catinatum* in Germany. The difference between the prevalence in our study and the study from Italy, UK, Germany could be the method of identification of the species, they have examined through a Reverse Line Blot assay from cultured larvae.

## CONCLUSIONS

The cyathostomins species identified after deworming of horses with fenbendazole 30 % were: *Cyathostomum catinatum*, *Cylicostephanus longibursatus*, *Cyathostomum pateratum*, *Cylicocyclus nassatus*, *Cylicostephanus goldi* and *Petrovinema poculatus*.

The most cyathostomins species expelled were 24-36 hours after deworming.

*Cyathostomum catinatum* was found in every horse with 100 % prevalence.

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