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Prevalence of Gastrointestinal Nematodes at *Las Criollas* Equine Unit, La Belén Ranch

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ABSTRACT

The prevalence of gastrointestinal nematodes in 65 horses at *Las Criollas*, La Belén Ranch, from the National Enterprise for Wildlife Protection, in the province of Camagüey, Cuba, was determined. P*arascaris equorum* and *Oxyuris equi´*s spreading ways were identified by floating helminth-ovoscopic analysis. The rest of the species were classified according to the morphological characteristics of previously cultured larvae. The formula referred by Vaklas Kouba to achieve temporary prevalence of parasitic nematodes was used in the study. The type with the highest prevalence found was *Cyathostomas*; the least was *Parascaris equorom* and *Strongylus vulgaris*. Other nematodes found were *Strongylus edentatus*, *Gyalocephalus capitatus*, *Poteriostomum* sp. *Oesophagodontus robustus*, *Triodontophorus* sp, *Trichostrongylus axei* and *Strongyloide westeri*.

Key Words: *prevalence, nematodes, horses*

INTRODUCTION

Horse population in Cuba declined in the late 1990 and early 2000. Today, there are 610 569 animals, of which 60 812 are found in Camagüey (Peinado, Torres and Campos, 2011).

One of the most commonly found pathologies in horses is gastrointestinal parasitism (Nielsen, 2012 and Von Samson-Himmelstjerna, 2012); namely the *Strongyloidae* family, made of large strongyles, with three clinically important species (Osterman, 2005); as well as small strongyles, representing more than fifty-one species. *Parascaris equorum* (*Ascaride)* is another species with major clinical significance for horses (Osterman *et al.*, 2007) around the world.

In recent years, an increase of *Cyathostominae* infestations has been reported, probably due to antihelminthic resistance, and the appearance of the larval cyathostomiasis syndrome. Additionally, the disease has remained masked due to severe effects of large strongyles, especially *Strongylus vulgaris*. This disease has decreased in the last few years in countries like the US, thanks to chemical parasite control programs (Lyons *et al.*, 2008).

As Matthews *et al.* (2004) and Von Samson-Himmelstjern (2008) said, large and small strongyles are commonly found in the large intestine of horses. They are composed of at least 19 types and 64 species (Lichtenfels *et al.*, 2008).

Few reports have been made in Cuba about this host species. Arece *et al*. (2002) dealt with the efficacy of a nematocide in several animal species, including horses; Salas *et al.* (2009) studied the prevalence of gastrointestinal helminthiasis on a ranch in the province of Camagüey. However, the general behavior of parasitic diseases, taxonomic grouping, and taxonomic classification of types and species is unknown in horses. As a consequence, several antiparasitic schemes are currently being applied in the absence of a national control program.

The aim of this study was to determine the prevalence of gastrointestinal nematodes in horses on Las criollas Farm, at La Belén Ranch.

MATERIALS AND METHODS

A group of 65 horses from *Las Criollas* Farm, at La Belén Ranch (National Enterprise for wildlife Protection, Camagüey, Cuba) were sampled in March.

Between 30 and 40 g of feces were collected directly from the each animal´s rectum, and were kept in separate tagged plastic bags, then carried in refrigerated containers to the Parasitology Laboratory of the University of Camagüey. The methodology established by Demedio *et al.* (1984) was used to process the samples.

The spreading modes of *Parascaris equorum* and *Oxyuris equi* were identified using the floating helmithic-ovoscopic analysis described by

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Rodríguez *et al.* (1987). Strongylate nematode larval culture was made according to Corticelli and Lai (1963). Later, the larvae were collected folowing the Niec (1968) procedure, cited by Corticelli and Lai (1963), and they were identified, according to Russell (1948) methodology, cited by Arundel (1985).

The temporary prevalence of parasitic types was made by SPSS 15.0 (2006), based on Kouba´s (1987) methodology. The results were graphicated using Microsoft Excel (2003).

RESULTS AND DISCUSSION

The prevalence of *Strongylus vulgaris* was 4.6 %, and null for *Strongylus equinus*. *Strongylus edentatus* showed a higher prevalence value (24.6 %) (See Table). As stated by Matthews *et al.* (2004), most research coincides in that populations of large strongylus have been gradually replaced by small strongylus populations. That trend is attributed, to the greater capacity of the latter to develop antihelminthic resistance, especially, to benzimidazole (Matthews *et al.*, 2004).

Poynter (1969) found 70 % prevalence of with *S. vulgaris* infestation. English (1979) investigated infestation of large strongylus in horses, during necropsy, with results of 93 % for *S. vulgaris*; 70 % for *S. equinus*; and 18 % of *S. edentatus*. Lyons *et al.* (1981) reported 43 % prevalence of *S. vulgaris,* but made no reference to the others. Dunsmore and Jue Sue (1985) identified *S. vulgaris* and *S. edentatus* in 22.5 % autopsied horses, similar to *S. edentatus* values in this study; the previous authors made no allusion to *S. equinus*. Mfitilodze and Hutchinson (1990) also reported 22 % prevalence for *S. equinus* and *S. edentatus*; it was 28 % for *S. vulgaris*.

Cardona *et al*. (2005) investigated the prevalence of large strongylus during the infestating phase (L3), which resulted in 38 % of *S. vulgaris* and 38.9 % of *S. equinus.* In that study, no *S. edentatus* larvae were found.

The animals sampled in this research were treated with Labiozol for four months before research started. The active principle of the medication is albendazole, which is prescribed for parental application in ruminants. It was administered in doses of 3.75 mg/kg live weight, a procedure that may be related to low prevalence detected during large strongylus screening, with the exception of *S. edentatus.*

Survival of erratic larvae may occur depending on the dose used, nematode prepatence, and the time elapsed since the last antiparasitic treatment. According to Pérez (2006), low doses of Benzmidazoles (5-10 mg/kg of weight for Albendazole) can kill between 90 and 100 % of the adult forms of large and small Strongylus. However, higher doses are required (25-50 mg/kg) to eliminate migrating larvae.

High prevalence values were observed in small strongylus, as the case of *Cyathostomas* found in 98.5 % of the animals tested; *Gyalocephalus capitatus,* in 52.3 % of the animals; *Poteriostomun* sp, in 44.6 %; *Oesophagodontus robustus,* in 23.1 %; and *Triodontophorun* sp, in 23.1 %. A high percent of animals is usually infested by small strongylus, mainly in the *Cyasthostominae* subfamily, which is demonstrated by prevalences reported by Collobert-Laugier *et al.* (2002), with 94 %; 41 % and 19 % for *Cyathostomas, Gyalocephalus capitatus* and *Poteriostomun* sp., respectively. Accordingly, the authors have stated that horses that turned out to be negative for *Cyasthostomas,* had received antiparasitic treatment with Ivermectine for a month. Mfitilodze and Hutchinson (1990) reported 85 % prevalence of *Cyathostomas;* 24 % of *Poteriostomun imperidentum;* and 30 % for *Triodontophorus serratus*.

Moreover, Traversa *et al.* (2007) stated that in Italy the prevalence of animals infested by *Cyathostoma* is 100 %, or near. Apparently, high prevalence of small strongylus owes to a wide variety of species within the *Cyathostominae* subfamily (Matthews *et al.*, 2004), which altogether, lead to a high percent of affected animals.

Small strongylus have features that made them different form large strongylus, which favors high percents of animals infested by the former group; particularly, the capacity of being under hypobiotic states until favorable conditions are produced, as occurs after the application of antparasitic treatments that kill adult nematodes. These larvae emerge and colonize the intestinal tract, spreading their eggs in the area (Monahan, 2000). Besides, they have biological cycles whose prepatence periods are shorter than for the large strongylus.

Trichostrongylus axei had 21.5 % prevalence, similar to findings by Cardona *et al.* (2005), who claim 21.3 % for this species; much higher than reports by Hoglund *et al.* (1997), with 1.3 %. The animals investigated in this paper were expected

to have lower prevalence values for this nematode, considering that the grazing areas used by horses are not shared with bovines, so cross-infection is not likely to occur. Prevalence of *Strongyloide westeri* (26.2 %) and *Parascaris equorom* (4.6 %) was observed. Lyons *et al.* (2006) and Lyons and Tolliver (2004), when studying helminth prevalence in colts, found the following results: *Strongyloide westeri* 2 % and 1.5 %; and *Parascaris equorom* 39 % and 22.4 %, respectively. Antiparasitic treatment schemes have no repercussion on *S. westeri* prevalence because its prevalence period is short, which favors continuous reinfestation of anmimals by this nematode. However, the prevalence of *P. equorum* is considerably reduced with antihelminthic treatments.

For O*xyuris equi*, prevalence was 7.7 %, lower than observations by Cardona *et al.* (2005), who reported 17.6 %.

CONCLUSIONS

The prevalence values detected are similar to the ones reported in other horse herds around the world.

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Table. Prevalence of different nematodes diagnosed

Nematodes	Animals evaluated	Positive animals Total	Prevalence (%)
Strongylus vulgaris	65	3	4.6
Strongylus edentatus		16	24.6
Triodontophorun sp		15	23.1
Cyathostomins		64	98.5
Gyalocephalus capitatus		34	52.3
Poteriostomun sp,		29	44.6
Oesophagodontus robustus		15	23.1
Trichostrongylus axei		14	21.5
Strongyloide westeri		17	26.2
Parascaris equorom		4	4.6
Oxyuris equi		5	7.7