

## Effectiveness of the Fenbendazole like Antiparasitic Drug in wild Felines *Puma concolor*, *Linx rufus*, *Panthera Tigris*, *Panthera onca* and *Herpailurus yaguarondi* under Captivity Conditions in Jalisco, México.

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### Abstract

With the purpose of knowing the effectiveness of the use of the Fenbendazole like anthelmintic agent in 5 species of wild felines, *Puma concolor*, *Linx rufus*, *Panthera tigris*, *Panthera onca* and *Herpailurus yaguarondi*, one carries out an investigation of descriptive character where it applies a dose of 5 mg/kg from Fenbendazole to a group of wild felines in captivity, they are given the anthelmintic into the feed, they were carried out studies of fecal tests using the technical flotation of Faust with solution of Sheather and the technique of direct microscopic exam with Lugol in three later occasions to the administration of the anthelmintic, every 9 days until the day 27, one observes a total of 30 samples with an increase of 40X. The Frequency of *Toxocara leonine* to the beginning of the treatment was of 77.7% and the frequency of *Ancylostoma caninum* was of 33.3%. The percentage of reduction (RP) to the 18 days post-treatment of mature parasites and eggs in *Panthera tigris* were of 86%, in *Panthera onca* 60%, in *Puma concolor* 75% and in *Linx rufus* 80%, to the 27 days post-treatment was eliminated the presence of *Ancylostoma caninum* and it diminish the presence of *Eimeria feline*, the percentage of reduction (RP) of mature parasites and eggs in 4 species of wild felines was 95%, except in *Herpailurus yaguarondi* that was of 62 reduction%.

**Keywords:** Fenbendazole; Wild felids; Anthelmintic drugs; *Toxocara leonine*

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### Introduction

The incorporation of anthelmintics drugs directly in the foods, it is beneficial for a program of control of parasites in wild species, (The Manual Merck of Veterinary science 6<sup>a</sup>. Ed. 2007). The conservation of wild felines in captivity requires of a knowledge and a handling adapted in the treatment of illnesses, (MacDonald and Loveridge 2010), according to Millán., *et al.* (2009) the wild and domestic felines are susceptible to the same agents infectious, many endemic infectious agents they have a minimum patogenicidad in species that are distributed in some region, but it can be mortal for species that are introduced in that region, for example, the infection for *Cytauxzoon felis* in Lynxes (*Linx rufus*) and pumas (*Puma concolor*) usually these, are free of the infection in endemic regions, but, it can be fatal in

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felines of non endemic regions, (Jakob and Wesemeier 1996; Peixoto., *et al.* 2007). The control of parasites in wild felines and the fecal test should be every 4 months, if the treatment with anthelmintics is necessary, a new fecal examination should be carried out after 1 or 2 weeks, to evaluate the effectiveness of the drug, (Mata Cilliar 1998), parasites like: *Toxocara cati*; *Toxascaris leonine*; *Capilaria spp*; *Trichuris spp*; *Aelurostrongylus abstrusus*; *Strongyloides larvae*; *Platynosomum fastosum*; *Giardia cysts*; *Cystoisospora felis*; *Eimeria* and *Toxoplasma-Hammondia oocysts*, and *Sarcocystis sporocysts* have been identified in wild felines of zoological of America of the South for, Adania., *et al.* (1998).

The use of Fenbendazole in domestic felines for treatments against *Toxocara gypsy* and *Ancylostoma caninum*, it has given good results to dose of 50 mg/kg. (The Merck Veterinary Manual 9th. Ed, 2005). This type of drug takes place in the parasites spasmodic contractions and contort, but it takes paralysis and death, being the toxicity for the scarce, (Frimmer M. 1990). Works like those of Booze and Oehme (1983) and Hayes, Oehme and Leipold (1983), they evaluated the grade of security in the use of Fenbendazole in pigs, observing that in the animals that received 125 mg/kg of the drug during 9 days, a leucopenia dose-clerk took place the seventh day, being normalized the figures to the 15 days and they didn't find lesions significant histopathology. The anthelmintic like the Fenbendazole, they play an important part in the prevention and treatment of parasitic illnesses and their effects can be studied in a great diversity of technical, these they can be to investigate the mechanism of action of the drug and their resistance, many of these techniques are complex and they require the experimental use in animals in-vitro according to, Balows., *et al.* (2005) some authors like Sumano and Ocampo (2006) and Restrepo (2013), they suggest that the use of Fenbendazole causes vomit in domestic cats.

## Materials and Methods

We applies a dose of 5 mg/kg of Fenbendazole like anthelmintic drug to a group of wild felines, *Puma concolor*, *Linx rufus*, *Panthera tigris*, *Panthera onca* and *Herpailurus yaguarondi*, which were under captivity conditions, are given the drug in the food which consists on dead chicken, being injected the chicken with the Fenbendazole, for the fecal tests we use the technical flotation of Faust with saturated solution of sugar (solution of Sheather) and the technique of direct microscopic exam with Lugol, one observes a total of 30 samples with an increase of 40X, the samples they were picked up and analyzed in the same day, they were carried out studies of fecal tests in three later occasions to the ministration of the Fenbendazole, every 9 days, until the day 27, the efficiency of the Fenbendazole like antihelmintic drug was determinate by means of comparison of the loads parasitic first, in front of the certain answers to the 9, 18 and 27 later days to.

## Methodological design

One carries out an investigation of descriptive character where the variables were analyzed in different populations, being these the 5 species of felines in captivity, 2 variables were measured, for they were applied it the you formulate described by Cole., *et al.* (1992), to measure the percentages of effectiveness of the Fenbendazole.

1) Frequency for parasite species by means of the following one formulates;

Frequency = animals infected for certain parasite/total animals \*100

2) Percentage of reduction (RP) of parasites and eggs opposing post-treatment, by means of the following one it formulates;

PR =  $(Co - Cn) / Co * 100$

Where Co = it is the Count of parasites and eggs Pre-treatment and Cn = to the Count of eggs and parasites Post-treatment.

## Results and Discussion

	Weigh approximate of the animal in kg.	Total dosage in mg.	Total dosage en ml.
<i>Panthera tigris</i>	150	750	7.5
<i>Panthera onca</i>	80	400	4
<i>Puma concolor</i>	60	300	3
<i>Linx rufus</i>	15	75	0.75
<i>Herpailurus yaguarondi</i>	2.5	12.5	0.12

**Table 1:** In the following table are shown the doses of Fenbendazol administered to the wild felines.

As it is observed in the previous table, the applied minimum dose it was of 0.12 ml and the maxim of 7.5 ml, which were consumed in their entirety by the felines.

	Nematodes	Cestodes	Toxocara leonina	Ancylostoma caninum	Eimeria felina.
<i>Panthera tigris</i>	8	0	11	2	0
<i>Panthera onca</i>	2	0	0	0	3
<i>Puma concolor</i>	3	0	0	0	1
<i>Linx rufus</i>	7	0	2	1	0
<i>Herpailurus yaguarondi</i>	0	1	8	10	7

**Table 2:** Shows the quantity of mature parasites and opposing eggs to the 9 days of the application of the Fenbendazole.

As it is observed in the previous table the Frequency from *Toxocara leonine* to the beginning of the treatment it was of 77.7%, while the frequency of *Ancylostoma caninum* was of 33.3%, and the presence of nematodes of the generate *Toxocara leonine* it was more abundant as for eggs and mature parasites than the cestodes found in the first fecal tests.

	Nematodes	Cestodes	<i>Toxocara leonina</i>	<i>Ancylostoma caninum</i>	<i>Eimeria felina.</i>
<i>Panthera tigris</i>	1	0	2	0	0
<i>Panthera onca</i>	1	0	1	0	0
<i>Puma concolor</i>	1	0	0	0	0
<i>Linx rufus</i>	2	0	0	0	0
<i>Herpailurus yaguarondi</i>	4	0	4	0	0

**Table 3:** In this table it is observed the quantity of mature parasites and opposing eggs to the 18 later days to the dosage of the Fenbendazole.

As it is observed in the previous table, to the 18 later days to the application of the Fenbendazole, the reduction percentage (RP) of mature parasites and eggs in *Panthera onca* was of 60%, in *Puma concolor* it was of 75% and in *Linx rufus* it was of 80% of reduction and in *Panthera tigris* it was of 86% of reduction.

	Nematodes	Cestodes	Toxocara leonina	Ancylostoma caninum	Eimeria felina.
<i>Panthera tigris</i>	0	0	0	0	0
<i>Panthera onca</i>	0	0	0	0	1
<i>Puma concolor</i>	1	0	0	0	0
<i>Linx rufus</i>	1	0	0	0	0
<i>Herpailurus yaguarondi</i>	0	0	10	0	0

**Table 4:** It shows us the quantity of mature parasites and opposing eggs to the fecal exam to the 27 later days to the application of Fenbendazole.

As we can observe in the table 4, to the 27 days post-treatment to the application of the Fenbendazole, the reduction percentage (RP) of mature parasites and eggs in 4 species of wild felines, (except in *Herpailurus yaguarondi* that was of 62% of reduction), it was of 95%, that which agrees for that recommended by the FAO, (2004) being the minimum that can be demanded to an anthelmintic drug to recommend their use.

## Conclusions

- The Frequency of *Toxocara leonine* to the beginning of the treatment was of 77.7%, while the frequency of *Ancylostoma caninum* was of 33.3%.
- The percentage of reduction (RP) of mature parasites and eggs in *Panthera Tigris* was 86%, in *Panthera onca* 60%, in *Puma concolor* 75% and in *Linx rufus* it was from 80% of reduction to the 18 days post-treatment.
- To the 27 days post-treatment to the application of the Fenbendazole, the percentage of reduction (RP) of mature parasites and eggs in 4 species of felines was 95%, that which agrees for that recommended by the FAO, (2004), except in *Herpailurus yaguarondi* that was 62% of reduction
- With the application of the dose of used Fenbendazole it was eliminated the presence from *Ancylostoma caninum* to the 27 days Post-application in the 5 species of felines.
- Vomits neither signs of adverse effects or toxicity were not presented to the drug in any animal.
- It is suggested to carry out studies from the effectiveness of drugs later anthelmintic to their use.

## Conflict of interest

There are not conflict of interest exists.

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