

Coprological prevalence of parasitic worms in Asiatic Lion and Leopard at Sakkarbaug Zoological Park, Gujarat, India

It is important to study the parasitic dynamics in wild animals especially in predatory animals as parasites can significantly affect population growth of a species (Marathe et al. 2002). Scatological analysis provides information on structure of diet, preferences of prey, ecological importance, endoparasitic dynamics, and health condition of animals (Patton et al. 1986).

The research work was conducted from August 2019 to March 2020. Faecal samples of Asiatic Lions and Leopards were collected from Sakkarbaug Zoological Park, Junagadh, Gujarat. Each sample was sealed in plastic zip lock bags labeled with name, sex and date. Samples were examined by direct smear examination method, floatation, and sedimentation method (Thawait et al. 2014).

Parasitic worms were identified by studying the morphology of the eggs as described by Basith et al. (2006) and Zajac & Conboy (2012).

A total of 129 samples were examined out of which, 20 (15.50%) samples were positive. Samples had eggs of *Paragonimus westermani* (Kerbert, 1878), *Spirometra felis* (Manson, 1882), and *Strongyloides spp.* (Grassi, 1879).

Similar study was conducted by Parsani et al. (2001) of captive animals at Municipal Corporation Zoo, Rajkot, Gujarat. They had examined 28 faecal samples out of which 17 (60.71%) were positive. In our study, 20 (15.50%) samples were positive for parasitic worm infection.

Our results differ from the carnivore animals of Nandan Van Zoo, Raipur, Chhattisgarh reported by Thawait et al. (2014). Those animals were infected by *Toxocara sp.* and *Diphyllobothrium sp.* *Spirometra* was found in carnivores and small mammals of Dhaka Zoo, Bangladesh studied by Raja et al. (2014).

Male lions in Sakkarbaug Zoological Park were not infected with parasitic worms. In females only 2 (3.7%) samples were positive for *Spirometra felis* and 1 (1.85%) sample was positive for *Paragonimus westermani* (Table 2). Similar study was done by Sulehria, et al. (2014), prevalence of endoparasite in African lion- *Panthera leo*. Overall prevalence was: cestodes (*Taenia sp.*) 14.28%, nematodes (*Toxocara sp.*) 33.3% and mixed infection 14.28% prevalent. It was recorded by Sulehria et al. (2014), that prevalence of endoparasite was higher in female lions 38.9% as compared to male lions 28.5%.

Table 1. Prevalence of parasitic worm in Asiatic Lion and Leopard at Sakkarbaug Zoological Park.

Common Name	Name of parasitic worm	No. of positive cases (Total samples)	Prevalence (%)
Asiatic Lion	<i>Paragonimus westermani</i>	1(54)	1.85%
	<i>Spirometra felis</i>	2(54)	3.70%
	<i>Strongyloides spp.</i>	0(54)	0
Leopard	<i>Paragonimus westermani</i>	8(75)	10.66%
	<i>Spirometra felis</i>	8(75)	10.66%
	<i>Strongyloides spp.</i>	1(75)	1.33%

Table 2. Prevalence of parasitic worms in male and female of Asiatic Lion and Leopard at Sakkarbaug Zoological Park.

Common name	Sex	No. of screened samples	No. of positive samples	Prevalence of parasitic worms		
				<i>Paragonimus westermani</i>	<i>Spirometra felis</i>	<i>Strongyloides spp.</i>
Asiatic Lion	M(n=4)	24	0	0	0	0
	F (n=6)	30	3	1(1.85%)	2 (3.70%)	0
Leopard	M(n=8)	65	15	7(9.33%)	7(9.33%)	1(1.33%)
	F (n=2)	10	2	1(1.33%)	1(1.33%)	0

M—Male | F—Female | n—number of animals

Table 3. Age group wise prevalence of parasitic worms in Asiatic Lion and Leopard at Sakkarbaug Zoological Park.

Common Name	Age group	No. of screened samples	No. of positive samples	<i>Paragonimus westermani</i>	<i>Spirometra felis</i>	<i>Strongyloides spp.</i>
Asiatic Lion	Young (1–10 years) (n=8)	46	03	1(1.85%)	2 (3.70%)	0
	Adult (10–20 years) (n=2)	08	0	0	0	0
	Old (Above 20 years) (n=0)	0	0	0	0	0
Leopard	Young (1–10 years) (n=3)	27	3	1 (1.33%)	2 (2.66%)	0
	Adult (10–20 years) (n=6)	45	14	7 (9.33%)	6 (7.99%)	1(1.33%)
	Old (Above 20 years) (n=1)	3	0	0	0	0

n—number of animals.

In this study, Leopard males were more infected as compare to females. Highest prevalence of parasitic worms was 7 (9.33%) *Paragonimus westermani* and 7 (9.33%) *Spirometra felis*. Prevalence of *Strongyloides spp.* was 1 (1.33%). While in females, prevalence of *Paragonimus westermani* and *Spirometra felis* was 1 (1.33%) respectively (Table 2).

The prevalence of parasitic worms with the age has been reported by Varadhrayan & Subramanian (2003). They observed age influence on the prevalence of helminthic infections and revealed that the animals aged one year in both herbivores and omnivores had higher prevalence of infection, (71.62% and 65.9%) as compared to the animals aged one month to one year. Carnivore animals were infected by *Ancylostoma*, *Toxocara*, *Toxascaris*, *Strongyloides*, *Capillaria*, *Spirurid*, *Diphyllobothrium*, *Hymenolepis*, and *Paragonimus*.

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