



ISSN: 0975-833X

## RESEARCH ARTICLE

### PREVALENCE OF INTESTINAL PARASITES WITH SPECIAL REFERENCE TO *SARCOCYSTIS* INFECTION IN STRAY DOGS AND ZOO CARNIVORES

Minakshi Kalita and \*Prabhat Chandra Sarmah

Department of Parasitology, College of Veterinary Science, Assam Agricultural University, Khanapara, Guwahati-781022, Assam, India

#### ARTICLE INFO

##### Article History:

Received 24<sup>th</sup> January, 2015  
Received in revised form  
16<sup>th</sup> February, 2015  
Accepted 09<sup>th</sup> March, 2015  
Published online 28<sup>th</sup> April, 2015

##### Key words:

Prevalence, Intestinal parasite, *Sarcocystis*, Stray dog, Zoo carnivore.  
The article may be considered to be final for publication.

Copyright © 2015 Minakshi Kalita and Prabhat Chandra Sarmah. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

#### ABSTRACT

Examination of faecal samples of young stray dogs from the locality around a cattle abattoir situated in the Meghalaya-Assam border near Guwahati showed 48% animals positive for *Sarcocystis* in mixed infection with *Ancylostoma* (32%), *Toxocara* (24%) and *Isospora* (16%). Similar examination conducted in captive carnivores of Assam State Zoo revealed 50% hyenas positive to *Sarcocystis* in mixed infection with *Ancylostoma* (62.5%). Of the zoo felines, *Sarcocystis* infection combined with *Isospora* was revealed in leopard cats (33.3%) only. The other parasites recorded in felines were *Toxascaris* in Royal Bengal tiger (50%), *Toxocara* in leopard (25%), *Isospora* in clouded leopard (12.5%). The pattern of *Sarcocystis* infection in stray dogs was comparable with that of hyenas having access to bovine musculatures. The findings were discussed in the light of available literature.

#### INTRODUCTION

The stray dogs and cats including their wild counterpart play a very important role in the epidemiology of *Sarcocystis* infection among domesticated herbivores reared on field grazing. Some species of this protozoan parasite utilize canids and felids as the definitive host which when infected through carnivorous pass sporulated oocyst or sporocyst in faeces. The herbivores are the intermediate hosts and become infected while grazing on pastures contaminated with infective faeces of the definitive hosts. In India, a good number of researchers have studied the prevalence of *Sarcocystis* in herbivorous animals (Sahai *et al.*, 1982; Jain and Shah, 1985; Pandit and Bhatia, 1996). However, similar information in the carnivorous definitive hosts is scanty. The present communication reports the prevalence of *Sarcocystis* and other gastrointestinal parasites in stray dogs and in captive wild carnivores.

#### MATERIALS AND METHODS

Faecal samples of 25 stray dogs under 1 year of age and 32 captive wild carnivores comprising 8 hyenas, 2 tigers, 16 leopards and 6 leopard cats formed the materials for this preliminary investigation. These stray dogs living around the cattle abattoirs situated in the Meghalaya-Assam border area near Guwahati had free access to the offals while captive carnivores of Assam State Zoo were having regular supply of

food from the abattoirs. The faecal samples were processed by routine floatation technique using Sheather's solution and examined first under low power (10X) objective of microscope to detect helminth ova and oocyst of coccidia and subsequently examined under high power (40X) objective for detection of sporocysts of *Sarcocystis*. Coccidia oocyst positive faecal samples were put into 2.5% potassium dichromate solution at room temperature for sporulation. Identification of parasitic stages (ova/oocyst/sporocyst) detected in the faecal samples were done as per Levine (1985) and Soulsby (1982).

#### RESULTS AND DISCUSSION

Out of 25 stray dogs 12 (48%) animals were found positive for sporocysts of *Sarcocystis*. The sporocysts detected under high power objective were oval in shape with a smooth wall enclosing 4 sporozoites and a granular mass of sporocystic residuum. Besides *Sarcocystis*, the animals were found positive for *Ancylostoma* (32%), *Toxocara* (24%) and *Isospora* (16%) infection (Table). The present record of *Sarcocystis* infection in stray dogs is in agreement with Singh *et al.* (1987) and Shastri (1990). Record of *Sarcocystis* infection as the highest of all gastrointestinal parasitism detected in the present study and in conformity with the reports of above workers suggest that the slaughter house offals offer a ready source of infection with *Sarcocystis bovicanis* to the stray dogs. Additional record of *Ancylostoma*, *Toxocara* and *Isospora* in the present study corresponded with the findings reported elsewhere (Agnihotri *et al.*, 2008; Das *et al.*, 2009).

\*Corresponding author: Prabhat Chandra Sarmah,  
Department of Parasitology, College of Veterinary Science, Assam  
Agricultural University, Khanapara, Guwahati-781022, Assam, India.

**Table Prevalence of *Sarcocystis* and other intestinal parasitic infection in stray dogs and captive carnivores**

Source	Species	No. of faecal samples examined	No. positive for <i>Sarcocystis</i>	No. positive for other parasite species (%)
Stray	Dog ( <i>Canis familiaris</i> )	25	12 (48)*	<i>Ancylostoma</i> - 8 (32.0) <i>Isospora</i> - 4 (16.0) <i>Toxocara</i> - 6 (24.0)
	Zoo			
	Hyaena ( <i>Hyaena hyaena</i> )	8	4 (50.0)	<i>Ancylostoma</i> - 5 (62.5)
	Royal Bengal Tiger ( <i>Panthera tigris</i> )	2	0	<i>Toxascaris</i> - 1 (50.0)
	Leopard ( <i>Panthera pardus</i> )	8	0	<i>Toxocara</i> - 2 (25.0)
	Clouded leopard ( <i>Neofelis nebulosa</i> )	8	0	<i>Isospora</i> - 1 (12.5)
	Leopard cat ( <i>Felis bengalensis</i> )	6	2 (33.3)	<i>Isospora</i> - 2 (33.3)

\*Figures in parentheses indicate percent infection.

Among the zoo carnivores hyenas (50%) and leopard cats (33.3%) were found positive for *Sarcocystis* infection. Present record of *Sarcocystis* infection in hyenas corresponded with that of Levine (1977). Record of other intestinal parasites viz, *Ancylostoma* (62.5%) in hyenas, *Toxascaris* (50%) in Royal Bengal tiger, *Toxocara* (25%) in Leopard and *Isospora* in clouded leopard (12.5%) and leopard cats (33.33%) made in the present study are the common parasitic infections of captive carnivores found to be consistent with previous reports (Sahoo *et al.*, 2009; Mahali *et al.*, 2010; Vatsya *et al.*, 2012). Additional record of *Sarcocystis* infection in dogs and captive carnivores of the present study resulted due to microscopic examination of faecal samples under high dry objective which is usually not used during routine faecal examination procedures. The sporocysts of *Sarcocystis*, owing to their small size (average 15 × 8 µm) thus escaped routine microscopic detection for which no report in captive carnivores is available to compare with the present finding. The pattern of *Sarcocystis* infection in stray dogs and hyenas in the present study was found higher than that of captive felines and this conform to the report of Kalita (2003) who observed lower prevalence of feline origin *Sarcocystis* (*S. bovifelis*) than canis origin species (*S. bovicanis*) in the bovine musculature.

### Acknowledgement

The authors are thankful to the Assam State Zoo authority and the Dean, Faculty of Veterinary Science, Assam Agricultural University, Guwahati-781022 for the facilities provided.

### REFERENCES

- Agnihotri, R.K., Sharma, D. and Sharma, Y. 2008. Incidence of gastrointestinal helminths in dogs of Himachal Pradesh. *J. Vet. Parasitol.*, 22 : 67-68
- Das, S.S., Kumar, D., Sreerishnan, R. and Ganesan, R. 2009. Gastrointestinal parasitic infections in dog in Puducherry. *J. Vet. Parasitol.*, 23 : 77-79
- Jain, P.C. and Shah, H.L. 1985. Prevalence and seasonal variation of *Sarcocystis* of cattle in Madhya Pradesh. *Indian J. Anim. Sci.*, 55 : 29-31
- Kalita, M. 2003. Studies on bovine *Sarcocystis* with a reference to seroprevalence of *Toxoplasma* infection. MVSc Thesis, Assam Agricultural University, 163 pp.
- Levine, N.D. 1977. Nomenclature of *Sarcocystis* in ox and sheep and of faecal coccidian of dog and cat. *J. Parasitol.*, 63: 36-51
- Levine, N.D. 1985. Nematode parasites of domestic animals and man. Burgess Publishings, Minneapolis, 414 pp.
- Mahali, A.K., Panda, D.N., Panda, M.R., Mohanty, B.N. and Sahoo, N. 2010. Incidence and seasonal variation of gastrointestinal parasitic infections in captive carnivores in Nandan Kanan Zoological Park, Orissa. *J. Vet. Parasitol.*, 24 : 111-115
- Pandit, B.A. and Bhatia, B.B. 1996. Epidemiology of *Sarcocystis* species in cattle of Uttar Pradesh. *Indian J. Anim. Sci.*, 66 : 435-442
- Sahai, B.N., Singh, S.P., Sahay, M.N., Srivastava, P.S. and Juyal, P.D. 1982. Note on the incidence and epidemiology of *Sarcocystis* infection in cattle, buffaloes and pigs in Bihar. *Indian J. Anim. Sci.*, 52 : 1005-1006
- Sahoo, N., Roy, P.K., Da, A., Samantaray, R.K., Dehuri, M. and Bharti, K.M.N. 2009. Gastrointestinal helminthic infection in animals of Nandan Kanan Zoological Park. *J. Vet. Parasitol.*, 23 : 95-96
- Shastri, U.V. 1990. Occurrence of parasitic infections in dogs in and around Parbhani city. Proceedings of the 1<sup>st</sup> Asian Congress of Veterinary Parasitology, Bihar Veterinary College, Patna, S-1 (24) :50
- Singh, K.P., Agarwal, M.C. and Shah, H.L. 1987. Prevalence of *Sarcocystis* sporocyst in stray dogs. *Indian J. Anim. Sci.*, 57 : 1101-1102
- Soulsby, E.J.L. 1982. Helminths, Arthropod and Protozoa of domesticated animals. 7<sup>th</sup> Edn., ELBS and Bailliere, Tindall, London. 809 pp.
- Vatsya, S., Abdullah, S., Sarmah, D. and Mudasir, M. 2012. Parasitic ova and oocyst observed in intestinal contents of a leopard (*Panthera pardus*)- A case report. *J. Vet. Parasitol.*, 26: 170-171.

\*\*\*\*\*