



## A survey on gastrointestinal helminths of captive blackbucks (*Antilope cervicapra*) in Tamil Nadu

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### Abstract

A survey was carried out to assess the prevalence of helminthic infection in blackbucks (*Antilope cervicapra*) at the Arignar Anna Zoological Park (AAZP), Vandalur, Chennai. The overall prevalence of helminths was 29.26% (n=140). The helminths noticed were strongyles, *Strongyloides* spp. and mixed infections of strongyles with *Strongyloides* spp. The data on prevalence of helminths was analysed with the meteorological parameters, average maximum and minimum temperature and average relative humidity and discussed.

**Keywords:** *Antilope cervicapra*, Blackbuck, Helminth parasites.

### Introduction

The blackbuck (*Antilope cervicapra*) is an antelope native to the Indian Subcontinent. It is seen practically in all the plains except along the Indian coast southward from the Surat. They avoid forest or hill tracts (Prater and Barruel, 1971). It has been classified as endangered by IUCN since 2003, as the blackbuck range has decreased sharply during the 20<sup>th</sup> century and it is now classified under Annexure III of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), 2014.

Confined areas in zoo enclosures make captive animals more prone to different parasitic infections, despite proper attention to feeding, water and maintenance of hygiene in captivity. Helminthic infections in particular can frequently be a major problem causing even mortality in captive wild animals. Parsani

*et al.* (2001) recorded *Trichostrongylus* spp. infection in blackbuck at Rajkot Municipal Corporation Zoo, Rajkot, Gujarat. Information on parasitic infections of antelopes is meagre in India due to paucity of systematic investigation. Hence, the study was carried out in animals of the Arignar Anna Zoological Park, Vandalur.

### Materials and Methods

During the study period, about 25g of faecal samples (20 pooled samples/month) were collected in 10% formalin from of the single enclosure housing eight blackbucks of all age groups, for 7 months from from Arignar Anna Zoological Park, Vandalur (AAZP). The samples were placed in a container, properly sealed and labelled. They were processed by both sedimentation and floatation technique for the presence of endoparasites as per the methods described by Soulsby, 1982. Identification of helminth eggs was done by observing their characters (Soulsby, 1982; Zajac and Conboy, 2013 and Bowman, 2014).

### Results and Discussion

In blackbucks reared at AAZP, the overall helminthic prevalence of 29.26% (n=140) was observed

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during this study period. The highest rate of strongyle and mixed (*Strongyloides* spp. and Strongyle) infection was during rainy season followed by winter and least infection during summer season. But, *Strongyloides* spp. revealed its peak level of infection in both rainy and winter seasons followed by summer season (Table 1).

**Table1. Season-wise prevalence of helminths in blackbucks**

| Study area                           | Arignar Anna Zoological Park |                            |                           |
|--------------------------------------|------------------------------|----------------------------|---------------------------|
|                                      | Rainy<br>(n=40)              | Winter<br>(n=60)           | Summer<br>(n=40)          |
| Positive Samples                     | 16<br>(40%)                  | 17<br>(28.33%)             | 8<br>(20%)                |
| <i>Strongyloides</i> spp.            | 4 <sup>a</sup><br>(10%)      | 6 <sup>a</sup><br>(10%)    | 1 <sup>a</sup><br>(2.5%)  |
| Strongyle                            | 8 <sup>b</sup><br>(20%)      | 8 <sup>b</sup><br>(13.33%) | 5 <sup>b</sup><br>(12.5%) |
| <i>Strongyloides</i> spp.+ Strongyle | 2 <sup>d</sup><br>(5%)       | 1 <sup>d</sup><br>(1.67%)  | 1 <sup>d</sup><br>(2.5%)  |
| $\chi^2$                             |                              | 3.81 <sup>NS</sup>         |                           |

n – Number of samples collected NS - Not Significant (P>0.05) Figures bearing same superscript do not differ significantly

Season-wise prevalence of helminths reached its peak during rainy season followed by winter and summer season. These findings were in agreement with Raman *et al.* (2010) who stated that the higher rate of helminth infection in sheep and goat from January 2001 to December 2007 had been observed during Northeast monsoon followed by Southwest monsoon, winter season and least infection during summer season in Tamil Nadu. Similarly, Varadharajan and Vijayalakshmi (2015) recorded the higher percentage of gastrointestinal parasites during rainy season followed by winter and least infection during summer in small ruminants of coastal areas of Tamil Nadu.

The helminth species noticed in blackbuck, were strongyle (13.57%), *Strongyloides* spp. (7.86%) and mixed infection of strongyle with *Strongyloides* spp. (2.86%). A significant difference was noticed among the species at 1% level (P<0.01) (Table 1).

Singh *et al.* (2012) recorded the prevalence of strongyle, *Strongyloides* spp. and coccidia in blackbuck

of Van Vihar National Park, Bhopal, Madhya Pradesh. Singh *et al.* (2006) observed only strongyle eggs in Blackbuck reared at Mahendra Choudhury Zoological Park, Chhatbir, Punjab.

In this study, the prevalence of helminthic infection was minimal, when the high maximum temperature (36.21°C) and low relative humidity (69.39%) had been recorded at AAZP. Strongyle infection was higher during rainy season with average maximum and minimum temperature of 29.97 °C and 23.96 °C and *Strongyloides* spp. was high during winter with average maximum and minimum temperature of 32.05 °C and 22.48 °C.

This study revealed that heavy rainfall and high relative humidity predisposed the animals to heavy parasitic infection and it is in accordance with the findings of Hawkins (1945). Desired anthelmintics coupled with better sanitary measures would be able to reduce the parasitic incidence in captive wild animals.



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## References

- Bowman, D.D., 2014. Georgis' Parasitology for Veterinarians, 10<sup>th</sup> Edn., W.B. Saunders, Philadelphia.
- CITES, 2014, <http://www.cites.org/sites/default/files/eng/app/2014/E-Appendices-2014-09-14.pdf> accessed on 31.03.2016.
- Hawkins, P.A., 1945. Studies of sheep parasites. VI. Observations on weather in relation to untreated nematode infections. J. Parasitol., 31:17.
- Parsani, H.R., Momin, R.R., Maradia, M.G. and Singh, V., 2001. A survey of gastro-intestinal parasites of captive animals at Rajkot Municipal Corporation Zoo, Rajkot, Gujarat. Zoos' Print J., 16 (10): 604-606.
- Prater, S.H. and Barruel, P., 1971. The Book of Indian Animals (VolBombay: Bombay Natural History Society.
- Raman, M., Bharathi, R.S., Basith, S.A. and John, L., 2010. Epizootiology of gastrointestinal helminths in sheep and goats of Tamil Nadu. Indian J. Small Rumin., 16 (1): 74-78.
- Singh, P., Gupta, M.P., Singla, L.D., Sharma, S., Sandhu, B.S. and Sharma, D.R., 2006. Parasitic infections in wild herbivores in the Mahendra Choudhury Zoological Park, Chhatbir, Punjab. Zoo's Print J., 21(11): 2459-2461.
- Singh, S., Shrivastav, A.B. and Sharma, R.K., 2012. Assessments on the body condition, endoparasitism and husbandry of rescued wild antelopes. J. Vet. Parasitol., 26 (1): 13-18.
- Soulsby, E.J.L., 1982. Helminths, Arthropods and Protozoa of Domesticated Animals, 7<sup>th</sup> Edn., ELBS, Bailliere and Tindall, London.
- Varadharajan, A. and Vijayalakshmi, R., 2015. Prevalence and seasonal occurrence of gastrointestinal parasites in small ruminants of coastal areas of Tamil Nadu. Int. J. Sci. . Res. Publ., 5 (2): 1-6.
- Zajac, A.M. and Conboy, G.A., 2012. Veterinary clinical Parasitology, 8<sup>th</sup> edn., John Wiley and Sons.