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Studies on the prevalence of gastrointestinal parasites in Blackbuck of Barnawapara wildlife sanctuary

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Abstract
The study has been designed to assess the prevalence of gastrointestinal parasites in captive Blackbuck of Barnawapara wildlife sanctuary. A total of 60 faecal samples were collected over a period of 12 months during summer, rainy and winter seasons and observed with direct, sedimentation, flotation method. Present studies showed that the overall prevalence rate of gastro-intestinal parasites in Blackbuck was 48.33%. In current investigation no protozoan or cestode cyst, oocyst or coccidian infection were studied. The prevalence recorded in Blackbuck was *Strongyle* 25.00%, *Amphistome* sp 20.00% and *Fasciola* sp. 03.33%. The seasonal investigation of gastrointestinal parasites in Blackbuck revealed a statistically significant (p<0.05) higher prevalence rate in rainy (65%) than in winter (45.0%) and summer (35%). In rainy season, the prevalence of *Amphistome* spp. was relatively higher than *Strongyle* spp., while the reverse was recorded in winter season with a higher prevalence rate of. *Strongyle* spp.

Keywords: Gastrointestinal parasites, blackbuck, Barnawapara wildlife sanctuary, seasonal investigation

Introduction
Blackbuck (*Antilope cervicapra*), also known as the Indian antelope, is an antelope found in India, Pakistan and Nepal. The blackbuck is the sole extant member of the genus *Antilope*. Being herbivores, blackbuck graze on low grasses, occasionally browsing as well.
Gastro-intestinal parasites diseases are the main threat to wild animals (Singh *et al*., 2009) [8]. Studies have showed a high prevalence and richness of directly transmitted parasite among wild animals in human modified landscape (Husain *et al*., 2013) [4]. Parasitic overload may negatively influence the health status of the animals (Hoberg *et al.*, 2001) [3]. Parasite reduces the host life indirectly through pathological effects (tissue damage, blood loss, spontaneous abortion, congenital malformations etc.) and by reducing the host's immunity and altering the physical condition (Singh *et al.*, 2009) [8]. Animals affected with endo-parasites develop clinical symptoms such as diarrhea, loss of appetite, potbelly and detection of worm in dung. In addition, some parasites can also transmit to human beings (Chakraborty *et al*., 1994) [2].
Faecal survey of parasitic prevalence plays an important role in wildlife management and health care. The present study was undertaken to know the prevalence of the gastrointestinal parasites in captive Blackbuck of Barnawapara Wildlife Sanctuary located in Block-Kasdol of district-Balodabazar-Bhatapara, Chhattisagarh. The main objective of present study is to develop baseline data about the prevalence of the Gastrointestinal parasites affecting captive Blackbuck in Barnawapara Wild life Sanctuary of Chhattisgarh. The study was conducted after the necessary approval from the Superintendent, Barnawapara wildlife sanctuary, Balodabazar- Bhatapara, Chhattisgarh.

Materials and Methods
The present study was carried out over a period of 12 months, from March 2022 to February 2023 in different seasons *viz*, Summer (March to June), Rainy seasons (July to September) and Winter (October to February) in captive Blackbuck of Barnawapara Wildlife Sanctuary located in Block Kasdol of Balodabazar Balodabazar-Bhatapara. A total of 60 fresh faecal samples irrespective of sex and age were collected randomly from the ground in a labeled polythene bags. The collected samples were subjected to detail routine parasitological analysis for the presence of parasitic eggs oocysts by direct smear examination, standard sedimentation and flotation techniques. The ova of different parasites were identified as per the morphometry and morphology as described by Soulsby (1982) [9].

Statistical analysis was carried out by Statistical Package for Social Science (SPSS) using one way Annova test.

Results and Discussion

The overall prevalence of gastro-intestinal parasites in captive Blackbuck of Barnawapara wildlife sanctuary was studied by examination of a total of 60 fecal samples (n=60) randomly in different seasons during March 2022 to February 2023. Samples were collected equally (n=20) in summer, rainy and winter season for examination of gastrointestinal parasites.

On gastro-intestinal parasitic examination 29 Blackbucks were found positive for any parasitic ova in out of 60 Blackbucks resulted in overall prevalence rate of 48.33%.

On differentiation of parasitic species, the *Strongyle* was dominated with 25.00% prevalence, *Amphistome* spp. 20.00% at moderate level and *Fasciola* spp. with least 03.33% prevalence (Table 01).

Table 1: Presence of gastro-intestinal parasitic eggs on 60 faecal samples of captive Blackbucks at Barnawapara Wildlife Sanctuary

Eggs of parasite identified	N	Summer (March-June)	Rainy (July-September)	Winter (October to February)
Fasciola sp.	60	--	2	--
Amphistome sp.		3	7	2
Strongyle sp.		4	4	7

Seasonal variation of gastro-intestinal parasites in Blackbucks

In Blackbuck highest prevalence of 65% recorded in Rainy season, followed by Winter 45% and least 35% in Summer.

Gastrointestinal parasite found positive record during summer season were *Strongyle* spp. (04/20) and *Amphistome* spp. (03/20), while *Fasciola* spp. was absent in 20 examined samples.

During rainy season parasitic presence increased with *Amphistome* spp (07/20), *Strongyle* (04/20), and *Fasciola* sp. (02/20) with parasitic presence of 35.00%, 20.00%, and 10.00% respectively with overall prevalence rate of 65% (13/20).

During winter season (October – February) *Strongyle* spp. infection increased (07/20), while *Amphistome* spp. (02/20) and *Fasciola* sp. (00/20) with parasitic presence of 35.00%, 10.00%, and 00.00% respectively with overall prevalence rate of 45% (09/20).

The study of gastrointestinal parasitic in captive Blackbuck of Barnawapara wildlife sanctuary showed an overall prevalence rate of 43.33% with *Strongyle* 25.00%, *Amphistome* sp 20.00% and *Fasciola* sp. 03.33%.

This study recorded lower than Nayak, T. (2016) [6], who claim 75% parasitic prevalence during rainy season in Blackbuck of Nandan Kanan Zoo, Bhuvneshwar, where *Fasciola*, *Amphistome* and *Stronglyle*, sp. were prominently detected. Thawait *et al.*, (2015) [10] recorded 35% and 62.5% parasitic infectivity in Blackbuck of Kanan Pendari Zoo, Bilaspur and Nandanvan Zoo, Raipur respectively with single infection of *Ascaria* sp. Ananda *et al.*, (2016) [1] recorded 100% parasitic loads in captive Blackbuck maintained in forest of Shivmoga, Karnataka. Pilania *et al.*, (2014) [7] found overall prevalence of gastro-intestinal parasites in blackbuck was 81.81% with *Strongyles* sp. dominated in Bikaner Zoo. Mir *et al.*, (2016) [5] found 75% Blackbuck in Bir Moti mini Zoo, Patiala was infected with *Strongyle* parasite.

Conclusion

In rainy season, the prevalence of *Amphistome* spp. was relatively higher than *Strongyle* spp., while the reverse was recorded in winter season with a higher prevalence rate of. *Strongyle* spp.

The prevalence of gastrointestinal parasites in Blackbuck kept in captivity is mostly influenced by various factors like management of enclosures, feeding and watering pattern of the animals, size of the enclosure *viz*; small or large enclosure, hygiene and sanitation of the animal keepers or attendants.

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