

*Short Communication*

CHEMOTHERAPY AGAINST GASTROINTESTINAL HELMINTHS IN HERBIVORE SAFARI AT NANDANKANAN ZOOLOGICAL PARK, ODISHA

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ABSTRACT

Endoparasitic diseases are one of the major problems in wildlife leading to morbidity and mortality. A total number of 183 animals (Spotted deer, Sambar, Barking deer and Four horned antelope) belonging to Herbivore Safari at Nandankanan Zoological Park were administered with Neozide plus suspension (Oxyclozanide - 6% w/v + Levamisole - 3% w/v, INTAS Pharmaceuticals) by mixing in the feed at the dose rate of 15 ml / head in spotted deer, 50 ml / head in sambar and 5 ml / head in barking deer and four-horned antelope. EPG (egg per gram) of all collected samples was determined on 0, 7th, 10th and 21st day of post treatment. The anthelmintic was able to reduce the egg count to zero giving a cent percent efficacy till 10th day of post treatment in sambar. But reoccurrence of the infection was seen in 21st day of post treatment in case of sambar and spotted deer leading to decrease in anthelmintic efficacy, while in barking deer and four horned antelope, reoccurrence was seen after 45th day of post treatment. This could be due to sharing of common feed and drinking sources or mass deworming in Safari.

KEY WORDS: Endoparasite, Anthelmintic, Deworming.

INTRODUCTION

India is unique in having immense natural beauty and possessing a rich and diverse wildlife. The state of Odisha has two national park and eighteen wildlife sanctuaries. Wildlife, as important sources, reservoirs and amplifiers of emerging human and domestic livestock pathogens particularly parasites, in addition to well organized zoonoses of public health significance, has gained considerable attention in recent years (Thompson *et al.*, 2009). A number of factors threaten the existence of wild animals in this country including wildlife diseases, in particular those arising from gastrointestinal parasites (Thawait and Maiti, 2015). Some researchers have carried out chemotherapeutic studies in zoological gardens and free ranging wild herbivore across different parts of the world. (Singh *et al.*, 2006; Schultz *et al.*, 2010; Tomczuk *et al.*, 2014; Jaiswal *et al.*, 2014; Kanungo *et al.*, 2012). However due to lack of study regarding the chemotherapy of anthelmintics in herbivore safari, this study was done to access the effect of anthelmintic on the gastrointestinal parasites present in animals of herbivore Safari in Nandankanan Zoological Park.

MATERIALS & METHODS

A total of 183 number of animals in the herbivore safari of Nandankanan Zoological Park consisting of Spotted deer (*Axis axis*) - 116, Sambar (*Cervus unicolor*) - 10, four-horned antelope (*Tetracerus quadricornis*) - 54, and

Barking deer (*Muntiacus muntjac*) -3 were administered with Neozide plus suspension (Oxyclozanide -6% w/v + Levamisole -3% w/v, INTAS Pharmaceuticals) by mixing in the feed at the dose rate of 15 ml / head in spotted deer, 50 ml / head in sambar and 5 ml / head in barking deer and four-horned antelope. Egg per gram (EPG) for all collected samples was determined on 0, 7th, 10th and 21st day post treatment. The efficacy of the above drug was accessed on the bases of reduction in faecal egg count by comparing the mean EPG of collected samples before treatment and after treatment by using the formula, Efficacy percentage= {(Pretreatment EPG - Post treatment EPG) / Pretreatment EPG} X 100

RESULTS & DISCUSSION

The examination of faecal samples collected randomly from 4 species of wild herbivore viz. in the herbivore safari revealed presence of gastrointestinal helminth like Amphistomes, Strongyles, Trichuris *sp.* and Strongyloides *sp.* On administration of Neozide plus to all animals in the herbivore safari, there was complete reduction in faecal egg count till the tenth day of post treatment indicating the efficacy of the anthelmintic to be 100%. However on the 21st day of post treatment there was presence of egg in faeces leading to reduction in anthelmintic efficacy in Sambar and Spotted deer. The treatment against gastrointestinal helminth showed an efficacy of 96.62% and 83.01 % at 21st day of post-treatment in Sambar and

Chemotherapy against gastrointestinal helminthes in herbivore

Spotted deer respectively (Figure-1) but cent percent reduction was seen in case of Barking deer and Chausingha (Table-1). There was no reoccurrence of

parasitic ova in Barking deer and Chausingha till 45 days post treatment.

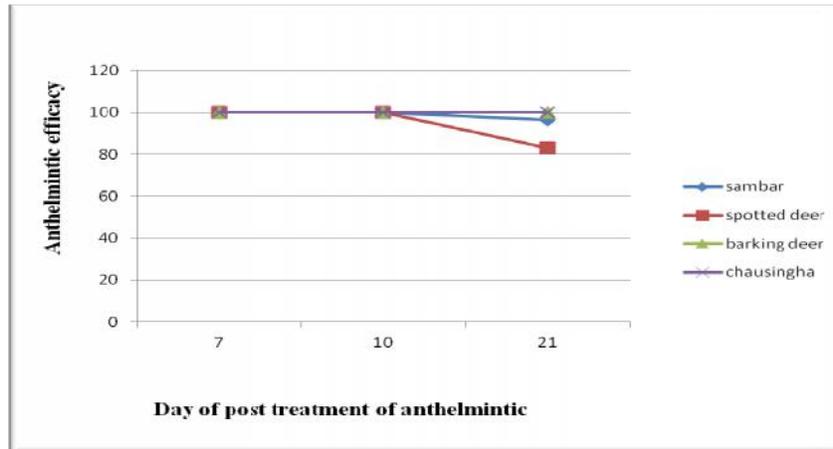


FIGURE 1: Efficacy of anthelmintic drug against gastro-intestinal helminths by faecal egg count reduction

TABLE 1. Comparison of faecal egg count after post treatment in animals of herbivore safari in Nandankanan Zoological Park

Animal Species	Average EPG			
	Pre-treatment	Post treatment		
	0 day	7 th day	10 th day	21 st day
Sambar	316 ±4.62	0	0	10.66 ±1.33
Spotted deer	620 ±4	0	0	105.33 ±1.33
Barking deer	202.66 ±1.33	0	0	0
Fourhorned antelope (Chausingha)	113.33±2.66	0	0	0

Atanaskova *et al.*, 2011 studied endoparasites in wild animals at the zoological garden in Skopje, Macedonia and treatment was done with Piperazine citrate (2.5mg/Kg) Ivermectin (0.2mg/Kg) and also with Piperazine Citrate (110mg/Kg), where they found out that no treatment was 100% effective due to long time between deworming and faecal sampling and introduction of vectors. A therapeutic study on wild herbivores in Mahendra Choudhury Zoological Park of Punjab (Singh *et al.*, 2006) was done in which the animals were treated with albendazole and fenbendazole by mixing in feed. The faecal egg count reduction was 100% by day three post treatment for most of the samples and reoccurrence of infection was seen after 30 and 55 days post treatment for different groups of animals which slightly differs from our investigation as reoccurrence of infection occurred earlier during our study. This could be attributed to the fact that the animals in our study were in a safari rather than in single enclosures where the animals shared the common feed and drinking sources. The delay in reoccurrence of parasitic ova in Barking deer and Chausingha could be possibly due to provision of separate feeding enclosure in Barking deer and less number of Chausingha present in the safari leading to proper administration of anthelmintic and ensuring efficacy. As is apparent from our study, it was not possible to entirely eliminate the parasitic burden in animals of herbivore safari in Nandankanan Zoological Park which was evident by the reoccurrence of infection post treatment, which

mostly occurs due to stress and close proximity of animals as well as de-worming in-mass where it becomes tough to establish whether the animals have been exposed to the drug. The existing infection can be controlled by adopting suitable anthelmintic therapy while ensuring proper administration of drug, along with proper management practices. Elimination of snail intermediate host could also help in reducing the parasitic burden on the animals.

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