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Efficacy of Albendazole in goats infected sub clinically with gastrointestinal nematodes

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Abstract

Study has been designed to know the current status of Albendazole efficacy in the goats belongs to goat unit of College of Veterinary Science and Animal Husbandry, Anjora, Durg, Chhattisgarh. A group of 15 adult goats were selected for the study. Faecal samples were subjected for fecal egg count in terms of EPG (Egg per gram) followed by hematological examination. EPG of animals was found 356.7 ± 15.33 which showed alarming status and can be considered as subclinical infection. Following EPG and hematology, animals were treated with Albendazole @ 7.5mg/kg. EPG count and hematology were again performed 10 days after treatment. Results revealed significant change ($p < 0.01$) in the EPG count of animals before and after the treatment. Blood parameters i.e. Haemoglobin (Hb), total erythrocyte count (TEC) and packed cell volume (PCV) showed significant difference ($p < 0.01$) before and after treatment.

Keywords: Goats, GI nematodes, EPG, hematology, Albendazole, treatment

Introduction

Goat is one of the earliest animal domesticated by man and is distributed worldwide with higher concentration in tropical areas and dry zones. Goats are excellent source of meat protein for human consumption in view of its short generation interval and no religious taboos. Goat meat can help in bridging the gap of protein malnutrition among consumers^[1, 2].

Goat production holds an important niche for sustainable agriculture in developing countries and supports a variety of socioeconomic functions throughout the world. The problems associated with gastrointestinal parasitism are often classified as production disease which results in reduced feed intake and alteration of gastrointestinal motility leading to diarrhoea. Gastrointestinal parasites compete for nutrients as a result the host metabolism get disturbed which results in decreased protein and energy retention along with mineral and water imbalance. This leads to poor performance and mortality particularly in young, aged and immunocompromised animals. Therefore, the economic losses are attributed to low production along with high cost of prevention and treatment^[3, 4]. Gastrointestinal nematodosis is generally known to cause serious impact on major haematological parameters like haemoglobin concentration, packed cell volume and total erythrocyte counts which results in anaemia^[5]. Nematodes are the most important gastrointestinal parasites in terms of prevalence and adverse effects^[6].

For reducing the number of parasite various types of synthetic and herbal anthelmintics are being used among which Albendazole is considered as a safe drug which have the potential to act on all three types of parasites i.e. trematode, cestode and nematodes. The present study has been designed to know the efficacy of the drug against GIT nematodes and to observe the status of parasitic infection in above mentioned goat farm.

Materials and Methods

A total of 15 adult goats from the goat unit of College of Veterinary Science and Animal Husbandry, Anjora, Durg, Chhattisgarh were selected for the study. Faecal samples were collected per rectally from the individual animal in labeled polythene bags. The faecal nematode egg counts (FEC) in terms of egg per gram (EPG) were performed by the modified McMaster technique^[7]. Hemoglobin, TEC and PCV was performed simultaneously to know the hematological status of the animals. Blood samples were collected in heparinised vials by jugular venipuncture and haemoglobin level (gm%), TEC (millions/ μ l) and PCV (%) were determined by Hellige-Sahli's haemoglobinometer, hemocytometer and microhaematocrit centrifuge method respectively^[8].

After EPG and hematological examination, all the animals were subjected for Albendazole treatment @ 7.5mg/kg by oral route. At 10th day of treatment, animals were subjected for EPG

and hematology examination. Data obtained was further used for statistical analysis by paired T- test.

Results and Discussion

Egg per gram

All the 15 animals were found positive for nematodal eggs before treatment. The highest and lowest EPG value was 450 and 250 respectively. Mean values of egg per gram (EPG) before and after treatment were found to be 356.7 ± 15.33 and 130.0 ± 15.28 respectively. Since, the EPG values were not too high to be considered as severe infection; so the result indicates subclinical form. Immediate treatment with a single dose of Albendazole @ 7.5mg/kg body weight was started in order to prevent the spread and further progress towards the severe clinical form of the disease. The animals were kept under observation and on 10th day post treatment, faecal

sample and blood were collected by earlier method. The samples were then subjected for hematology (Hb, TEC, and PCV) and faecal (EPG) examination as per standard procedure mentioned above. On the basis of statistical analysis, a significant difference in the values of EPG was recorded before and after treatment. This result supports the fact that Albendazole is still considered as safe and effective drug for the treatment against nematode infection.

Hematology

Results of hematology revealed statistically significant change in hemoglobin, TEC and PCV values before and after treatment which indicates that blood loss due to parasitic infection has been reduced following Albendazole treatment. Mean values of hemoglobin Hb, TEC and PCV before and after treatment were shown in Table 1.

Table 1: Mean hemoglobin (Hb), Total erythrocyte count (TEC) and packed cell volume (PCV) before and after treatment (Mean±SE)

	Number of animals	Blood profile		
		Hb (g/dl)	TEC (millions/ μ l)	PCV (%)
Before treatment	15	6.640 ± 0.180	5.320 ± 0.141	21.73 ± 1.40
After treatment	15	$7.287 \pm 0.206^{**}$	$5.793 \pm 0.139^{**}$	$24.67 \pm 1.03^{**}$

** Highly significant at $p < 0.01$

Our results are closely associated with various researchers. Sanyal *et al.* (2014) ^[9] recorded significant decrease in the hemoglobin and PCV values in the animals with more EPG compare to the animals having less EPG. A relative decline in the value of Hb, TEC and PCV in animals suffered from heavy load of nematodal infection was reported by Kumar *et al.* (2015) ^[10]. Jas *et al.* (2008) ^[5] observed that GIT nematodes generally causes serious impact on haematological parameters like haemoglobin concentration, packed cell volume and total erythrocyte count leading to anaemia. Keyyu *et al.* (2002) ^[11] studied the effect of Albendazole in a group of sheep and found that animals treated with the drug showed 59.4% reduction in faecal egg count.

Conclusion

Animals suffered from the subclinical infection of gastrointestinal nematodes may be treated early in order to prevent further progress of the disease towards severe clinical form. Albendazole is an effective anthelmintic drug used against nematodal infection and in this study treatment with the drug resulted into significant decrease in Egg per gram (EPG) and improvement in the hematological parameters.

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