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Research Article

Prevalenceof Helminth Parasites in Goats of Musikot Municipality (West Rukum District, Nepal)

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Abstract

This study was conducted to find out the prevalence of helminth parasites in the goats of Musikot Municipality in west Rukum District during October 2018. A total of 50 faecal samples of goats from different households were collected and laboratory examination was carried out in the Central Veterinary laboratory (CVL), Tripureshwor. The examination of samples was done by using sedimentation technique. In total, 35(70%) samples were found positive for different nematodes. Highest 32(64%) prevalence of nematodes parasites was found followed by Trematodes 3 (6%) however all samples were found to be negative for Cestodes. The highest number found was of Strongyles spp. 27 (54%), followed by Trichuris spp. 5 (10%) and at last Fasciola spp. 3 (6%). Age-wise, the highest prevalence of helminth parasites was found highest 31 (88.57%) in the age group of > 6 months followed by 3-6 months 4 (11.428%) and all samples < 3 months were negative.

Keywords: *Strongyles Spp; Trichuris Spp; Fasciola Spp; And Sedimentation Technique*

Introduction

Livestock is an integral part of rural livelihoods of Nepal, reared for various purposes (Devkota, 2005/2006) [1]. Goatrearing is a necessary aspect of crop farming system in Nepal. The yield of local breeds of goats under indigenous management and cropproduction system is low because of poor diet, lack of health care and other management defects ((Joshi *et al*., 2004) [9].

Goats are dominant animals speciallyin the hilly region of Nepal. They are an important means of obtaininganimal protein and extra-household income. They also provide organic manure whichcan be utilized forincreasing agricultural productivity. Their meat is expensive than other animal's meat and is preferred by millions of people throughout the country (Neopane, 1998) [12].

Nepal has been facing this problem as a big threat for a long period of time. Gastrointestinalparasitic infection is one of the prominent diseases of goats, especially helminthicinfestation which is one of the major healthissueminimizing the productivity (Dimander *et al*., 2000; Johannes *et al.,* 2009) [2].

Trematodes commonly known as flukes mostly found in the bile duct or small intestine and can also infect the lungs. Trematodes especially include *Fasciola spp.*, *Schistosoma spp.,* and*Paramphistomum spp.* (Agrawal and Shah 1989) [19]. The infection of domestic ruminants is with *Fasciola hepatica* and *F. gigantica* (Hansen, 1993) [4]. Mahato, *et al.,* (1997) [11] mentioned that Fasciolosis is the most common animal disease and of the important causes of deterioration in livestock productivity of Nepal. The disease isknown by most Nepalese farmers and called as namle or mate in local language (Joshi, 1989) [5].

Cestodes also known as tapeworm are a group of worms, possessing two characteristic features; they all have flat, ribbon like bodies and digestive tract is absent.

The occurenceof parasitic infection depends on the availability ofdirect and indirect hosts, the worm and the surrounding things. The occurrence of parasitic infection is dependanton: rise in theamount of infective stages, change in susceptibility of host, introduction of prone animals and the pathogen (Urquhart *et al.,* 1988) [18].

Parajuli (2007) [13] studied intestinal helminth parasite of goat (*Capra hircus*) and found 181(81.53%) positive samples among 222 total samples from Khasibazar of Kalanki, Kathmandu.

Sharma (2012) [14] studied the occurence of Nematodes in goats of Thulokhola Watershed area in Nuwakot district. A total of 129 faecal samples were collected from different villages of Nuwakot and were examined for gastrointestinal nematode parasites. Out of it, 107 (82.95%) samples were found positive for at least one type of nematodes. The occurence of helminth parasites were highest (82.17%) while flukes showed a lowest prevalence.

Shrestha (2013) [15] studied the prevalence of helminth parasites in goats of Rukum district.Altogether 280 faecal samples were collected from different village development committee (VDCs) of Rukum and were examined for helminth parasites. Out of 280 samples, 235 (83.93%) were found to be positive for one or other type of helminth parasites. Highest prevalence of nematodes parasites was found (80.71%) followed by cestodes (7.50%) and trematodes (6.07%). The highest occurence according to age was found among the samples from goats of > 6 months i.e. 92.75% and least was found in goats of 0-6 months i.e.75.35%.

Gelal (2017) [3] conducted a study on prevalence of helminth parasites in goats slaughtered at retail meat shops in Bhaktapur district. Out of 102 faecal samples overall prevalance was found 32 (31.37%) for nematodes. The Occurrence of nematodes parasites were highest 78.12% while trematodes showed a low occurrence. Cestodes were not observed in any type of samples. *Strongyle spp.* and *Fasciola spp*. were the mostly found parasites.

Kunwar and Sukupayo*et al.,* (2018) [10] studied theoccurrence of Intestinal Nematodes on Goats in Salley, Panauti Municipality, Nepal. 170 samples were examined from August 2017 to January 2018. The samples were observed microscopically by sedimentation technique for round worms. Among collected samples 12.36% were found to be positive with helminth parasites. Overall prevalence revealed trematode (*Fasciola spp.*) cestoda (*Taenia spp.)* and nematode (*Strongylus spp.)* Among them the infection of *Fasciola spp.* was of largest occurence at 2.94%. According to sex, 14.81% of male and 10.34% of female samples were positive for Nematodes. According to age, the highest prevalance was among the goats of > 6 months i.e.14.06% and the lowest was in goats of 3 - 6 months i.e. 9.25%.

The worm load in the gastro-intestinal tract is responsible to reduce the feed conversion ratio, so the goat is unable to gain desirable weight. Very few studies have been conducted in Nepal to determine the potential losses in goat population.

The aim of this experiment was to determine the prevalence of Nematodes in goats of Musikot Municipality.

Materials And Methods

Study site

The study was done in Musikot Municipality of Rukum district. Rukum falls among one of thedistrictof Rapti zone. Western Rukum falls underKarnali Provinceand isone of the 77 districts of Nepal. Its headquarter is Musikot. The Western Rukum covers land of 1,213.49 sq.km (468.53 sq mi) with a total population of 154,272according to census of 2011.

Time period of study

This study was carried out during October, 2018.

Samples size

All together 50 faecal samples were collected from goats of the study site.

Sampling method

50 faecal samples from goats of thestudy areas were collected randomly.

Collection of samples

Samples were collected in the morning from the rectum of the Goats. When it was not possible to collect samplesfom rectum; faeces were collected from freshly voided samples not mixed any exogenous materials. The samples were collected in separate zip lock bagsand marked for identification.

Transportation and preservation of samples

The collected faecal samples in Zip lock plastic bag were transported keeping in the cool box containing ice pack. The entire collected samples were transported to Central Veterinary Hospital (CVL) Tripureshwor, Kathmandu and preserved in refrigerator until total examination was performed.

Laboratory examination

The laboratory work was performed at Central Veterinary laboratory (CVL), Tripureshwor.

Laboratory examination of faecal samples

Sedimentation method (Qualitatively)

The sedimentation technique as described by Soulsby (1976) [16] was used to detect the presence of eggs of parasites in the samples.

Procedures for sedimentation technique

About 3 g faeces were grinded with water in mortar and pestle and it was transfered through a sieve and the debris was thrown away. The filtrate was allowed to stand for 5 min in a beaker. Then, the supernatant was thrown and sediment was again filled with water till it becomes clear and allowed to sediment for next 5 minutes. Finally the supernatant was discarded and few drops of the sediment were

placed on a grease-free glass slide and observed under the microscope in low magnification (10 X and 40 X). Microscopic examination was done for the observation of eggs of Nematodes as mentioned by Soulsby (1978) [17].

Data analysis

The Microsoft excel program was used to obtain the result and interpreted accordingly.

Results and Discussions

Results

Overall prevalence of helminth parasites

Out of 50 faecal samples, 35(70%) samples were found to be positive for helminth parasites.

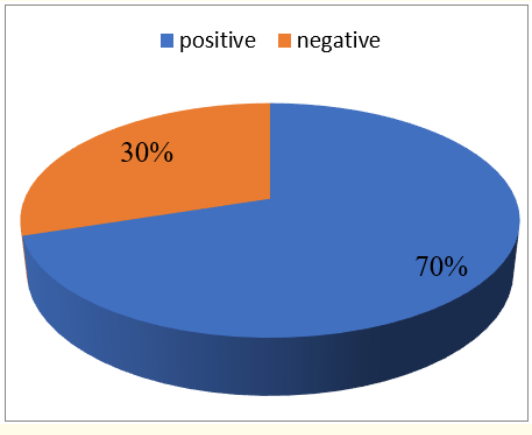

Figure 1: *Pie chart showing total prevalence of helminth in goats.*

Species-wise occurrence of helminthes

Out of 50 faecal samples examined, the prevalence of nematodes parasites was found to be highest (64%) followed by trematodes (6%) and all samples were found to be negative for cestodes. The most common parasite encountered were *Strongyles spp.,* 27(54%), *Trichuris spp.*, 5(10%) *and Fasciola spp.* 3(6%).

Age-wise prevalence

Samples from different age group were collected and studied for helminth infestation. Age-wise, the highest prevalence of helminth parasites were found to be in the age group of > 6 months 31 (88.57%) followed by 3-6 months 4 (11.428%) and *all samples < 3 months were negative.*

Discussion

This study was conducted to find the prevalence of helminth parasite in the goats of Musikot Municipality in west Rukum district. The frequency of helminth parasites is affected by the temperature,deworming practice, samples size, nature and dwelling place of animals,

cleanliness and nutrition. In the current study, the overall occurence of helminth parasites was found to be 70%. It is relatively higher than that of the result given by Gelal (2017) [3] who had reported 31.37% positive, Kunwar and Sukupayo (2018) [10], 12.36%; and relatively lower than that of the result given by Parajuli (2007) [13], found 81.53%, Sharma (2012) [14], 82.95%; and Shrestha (2013) [15], 83.93%. The difference in frequency of occurence in different locations might have occured due to variations in samples size, influence of environment, management practices, public awareness and Deworming practices.

The prevalence rate of nematodes parasites was found to be highest (64%) followed by trematodes (6%) and all samples were negative for cestodes were observed during study period. High prevalence of nematode parasites was reported by Sharma (2012) [14] i.e. 82.17%, followed by Shrestha (2013) [15] i.e. 80.71% and Gelal (2017) [3] i.e. 78.12%, and lowest reported by Kunwar and Sukupayo (2018) [10] i.e. 6.77%. The variationin the results may be due to samples size, climatic condition and deworming practices. Similarities results of prevalence of trematodes parasites was reported by Shrestha (2013) [15] i.e. 6.07% because of similar climatic condition of the study area, similar genetic composition of the goats and management system. The Strongylesspp. infection in the current study was found as 54%whereas it was much lower i.e. 2.65% by Kunwar and Sukupayo (2018) [10].

In this study, the presence of*Trichuris spp.* (10%) and *Fasciola spp.* (6%) was found higher than that given by Kunwar and Sukupayo (2018) i.e. 2.94% and lower than that of Shrestha (2013) [15] i.e. 16.43% in *Trichuris spp.* and 6.07% in *Fasciola spp*. The greatest frequency of occurence of nematodes were found in the goats in the age group of > 6 monthsi.e. 31 (88.57%) followed by 3-6 months 4 (11.428%). Whereas the finding was found to be higher than the result given by Shrestha (2013) [15] i.e. 92.75 and lower than that of Kunwar and Sukupayo (2018) [10] i.e. 14.06% in > 6 month age group.

Conclusion

The findings of this study have provided information on prevalence of helminth parasites in goats in Musikot Municipality in west Rukum district. Highest prevalence of nematodes parasites was found (64%) followed by trematodes (6%) however all samples were found to be negative for cestodes. From this study, it can be concluded thatmajority of helminth parasites belonged to the genera *Strongyles spp.*27 (54%), followed by *Trichuris spp*., 5(10%) and *Fasciola spp.* 3(6%).

Age (Month)	Total samples	Microscopical examination result of positive samples		
		Strongyles spp.	***Trichuris spp.***	***Fasciola spp.***
<3	**7**	0(0%)	0(0%)	0(0%)
3-6	10	2((20%)	1(10%)	1(10%)
> 6	33	25(75.75%)	4(12.12%)	2(6.06%)

Table 1: *Age-wise and species-wise prevalence of helminth parasite in the study population.*

Species	Microscopical examination result of positive samples
Strongyles spp.	27(54%)
Trichuris spp.	5(10%)
Fasciola spp.	3(6%)
Species	Microscopical examination result of positive samples
Strongyles spp.	27(54%)
Trichuris spp.	5(10%)
Fasciola spp.	3(6%)

Table 2

As Goats are taken for grazing incommunity pasture land and dewormingagainst parasites at regular interval is not followed, it may lead toweak and debilitated state and increased susceptibilities to the parasitic infestations and loss of production of goats.Hence, application of rotational grazing, regular deworming and proper management practices can be recommended to decrease economic loss from internal parasitic burden in future.

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