

Prevalence of Strongyle infections in goat of Maha Koushal region, Madhya Pradesh, India

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Abstract The coproculture study on Strongyle infection of goats was carried out in small holder farmers kept under semi-intensive management system in Balaghat, Narsinghpur and Chhindwara district, Madhya Pradesh, during the period from July 2011 to February 2012. Copro-culture of the samples positive for Strongyle infection revealed *Haemonchus* sp., *Trichostrongylus* sp., *Oesophagostomum* sp., *Strongyloides* sp., and *Bunostomum* sp. in a decreasing order in goats. The larvae of *Haemonchus* sp. (61.63 %) and *Strongyloides* sp. (7.50 %) were highest in Balaghat, *Trichostrongylus* (18.13 %) in Narsinghpur, while *Oesophagostomum* sp. (10.50 %) and *Bunostomum* sp. (5.75 %) were in Chhindwara district. The finding of this study indicates that, even though subclinical in nature, Strongyle infection are one of the major problems that could hamper health and productivity and there is need for design a programme to minimize and control Strongyle infection in goats in the study area.

Keywords Copro-culture · Goat · Larvae · Madhya Pradesh · Strongyle

Introduction

Goats in India possess an estimate of 140.5 million (Livestock census 2007). The poor animal production and

management coupled with infectious and parasitic disease had lead to reduce productivity of small ruminants (Hailelul 2002). Parasitic infections cause a serious health threat and limit the productivity of livestock due to the associated morbidity and mortality (Nwosu et al. 2007; Singh et al. 2014). Small ruminants managed under semi-intensive production systems are extremely susceptible to the effect of wide ranges of endoparasites (Abebe and Esayas 2001). Strongyle infection of goat is responsible for economic losses through reduced productivity and increased mortality (Perry et al. 2002). The loss through reduced productivity is related to reduction of food intake, stunted growth, reduced work capacity, cost of treatment and control of nematodes (Pedreira et al. 2006; Odoi et al. 2007; Chaudary et al. 2007). The effect of infection by Strongyle infection varies according to the parasite concerned, the degree of infection and other risk factors such as species, age, season and intensity of worm burden. Hence, it is imperative to investigate the level of the parasitism, the type of Strongyle and the associated risk factors those make the small ruminants susceptible to the wide host range of Strongyle infection in an area, in order to devise effective control measure and monitor their outcome properly, so that the purpose of this study to determine the prevalence and severity of Strongyle infection, establish the relationship between risk factors of Strongylosis and their prevalence and identify the most prevalent Strongyle in small ruminants in different district of Madhya Pradesh, India.

Materials and methods

The faecal samples positive for Strongyle infection in a month were, pooled district wise and culture in the

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laboratory by glass tumbler (300 ml capacity) method as per the procedure of Roberts and Sullivan (1949). A drop of preserved sediment containing larvae was placed on a glass slide, mixed with a drop of Lugol’s iodine or aqueous Safranin and then examined under dry magnifications of the compound microscope after applying a cover slip over the preparation. 100 L₃ parasites were counted and identification of Strongyle larvae was done with the help of the key and plates provided by Ministry of Agriculture, Fishery and Food (1971).

Results and discussion

The larvae of Strongyle nematodes recovered from coprocultural examination, were identified up to the level of genera to which they belonged. The month wise generic composition of nematode larvae revealed that *Haemonchus*

sp. was predominant during July–September, *Trichostrongylus* sp. during October–February, *Oesophagostomum* sp. during July–August and in October month, *Strongyloides* sp. July–October while *Bunostomum* sp. was predominant during July–November month (Fig. 1). The overall composition of the coprocultural larvae revealed that *Haemonchus* (60.88 %) was the most predominant followed by *Trichostrongylus* sp. (17.42 %), *Oesophagostomum* sp. (10.13 %), *Strongyloides* sp. (6.83 %). and *Bunostomum* sp. (4.75 %), while district wise, Balaghat had the higher prevalence of *Haemonchus* (61.63 %) and *Strongyloides* (7.50 %), Chhindwara for *Oesophagostomum* (10.50 %) and *Bunostomum* (5.25 %) and in Narsinghpur had predominant infection of *Trichostrongylus*. (18.13 %) (Table 2). The infection with gastro-intestinal nematodes was observed throughout the study period and well agreement with (Nginyi et al. 2001; Githigia et al. 2005), suggested hot and humid tropical environment to be

Fig. 1 Month wise mean generic composition (%) of nematode larvae in goat of M. P.

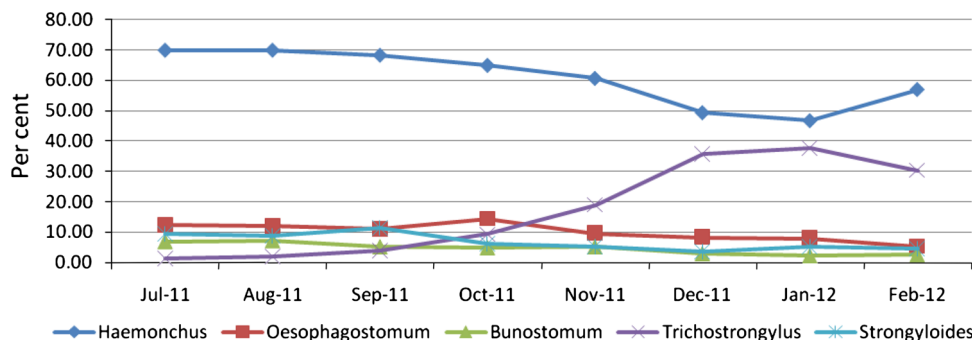


Table 1 Characteristic features of strongyle nematode larvae recovered from copro-culture

S. no.	Name of larvae recovered	Key identification features
1	<i>Haemonchus</i>	Slender larva, tail of seath of medium length tapering to a point and often kinked. Tail of seath very short, conical
2	<i>Trichostrongylus</i>	Small larva bearing one or two tuberosities or indistinctly rounded
3	<i>Oesophagostomum</i>	Larva of medium size, 32 pentagonal gut cells, lumen of gut wavy
4	<i>Strongyloides</i>	Without seath, oesophagus nearly half the length of the body with seath, oesophagus less than ¼ the length of the body
5	<i>Bunostomum</i>	Very small larva with 16 guts cells

Table 2 Mean generic composition (%) of nematode larvae in goat of Madhya Pradesh (M.P.) district nematode larvae

District	Nematode larvae				
	<i>Haemonchus</i>	<i>Oesophagostomum</i>	<i>Bunostomum</i>	<i>Trichostrongylus</i>	<i>Strongyloides</i>
Balaghat	61.63	9.50	4.75	16.63	7.50
Narsinghpur	60.38	10.38	4.25	18.13	6.88
Chhindwara	60.63	10.50	5.25	17.50	6.13
Over all	60.88	10.13	4.75	17.42	6.83

provide favourable condition for the development of various species of Strongyle nematodes viz., *Haemonchus contortus*, *Trichostrongylus* sp., *Oesophagostomum* sp., *Strongyloides* and *Bunostomum*, who further indicated severity of infection to be influenced by weather conditions to a large extent. The characteristic features of Strongyle larvae are shown in Table 1. The contribution of agro ecology and climatic parameters proposed to play an important role in the development and survivability of infective stages of Strongyle nematodes on pasture. The collective predominance of *Haemonchus* sp. to be found on copro-culture in the present study and well agreement with those reported by Parihar et al. 1996; Faizal et al. 1999; Githigia et al. 2005. However, highest prevalence of *Haemonchus* sp. might be due to high biotic potential to acquire faster resistant than other nematodes. The occurrence of higher prevalence of Strongyle nematodes in this region, animals were kept confined to small animal houses, during night in a muddy-floored house that provided favourable condition for the development in large no. and transmission of infective larvae.

Conclusion

The overall composition of the coprocultural larvae in the entire three districts viz., Balaghat, Narsinghpur and Chhindwara of Madhya Pradesh, India revealed that *Haemonchus* was the predominant nematode, followed by *Trichostrongylus*, *Oesophagostomum*, *Strongyloides* and *Bunostomum*. These parasites are responsible for causing heavy losses due to reduced production, morbidity and mortality. However, suggested that the proper deworming schedule of animals, when conditions are more favourable for development and survival of Strongyle larvae on the pasture. Rotational grazing pattern is used at interval and avoid infected herd with healthy herd. Moreover, proper pasture and animal management could improve the control of gastrointestinal nematode infections in goat in small holder farmer.

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