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RESEARCH OPINIONS IN ANIMAL & VETERINARY SCIENCES

Short communication

Morphological characterization of the Trichostrongylus species isolated from sheep in Tabriz, Iran

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Abstract

The aim of the present study was to identify *Trichostrongylus* species of sheep using morphological techniques. 61 samples of the parasite were collected from the slaughtered sheep and were preserved in %70 alcohol. Then, male worms, using nematodes systematic keys were identified. Tree different species of trichostrongylus including *T.probolorus*, *T.vitrinus, and T.colobriformis* were isolated and identified. *Trichostrongylus* in this area has less diversity than other localities of the country. A total of 20 (32.8%) out of 61 samples were found positive for at least one of the *Trichostrongylus*. Percent prevalence for *T. vitrinus*, *T. colobriformis* and *T. probolorus* were 16.4, 9.8 and 6.6% respectively. The width, spicule length, gubernaculums length were significantly high in *T. vitrinus.*

Keywords: *Trichostrongylus*; Morphology; Ruminant; Iran

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Introduction

Gastrointestinal tract parasites are known to be common in large and small animals and are one of the most important problems in small ruminants by causing disease, mortality and production losses. Ruminant gastrointestinal infections with parasitic nematodes are closely associated with the weight loss of livestock and even death in severe cases (Steel et al., 1972; Steel et al., 1974).

The most important parasitic nematodes of ruminants digestive tract belong to the order Strongylidea and family of trichostrongylidae. Due to the impact on livestock production, Trichostrongylid nematodes (Nematode:Trichostrongylidae) have been accounted as a veterinary priority (Horohov et al., 2006). *Trichostrongylus* genus parasites of domestic animals and specially ruminants are a most important cause of economic loss throughout the world. The economic impact of these parasites including weight loss, impaired wool and milk production and poor reproductive performance.

Decrease inappetence, is the main aspect of *Trichostrongylosis* and is generally recognized as a major feature in the pathogenesis of this parasite. Genus *Trichostrongylus* has been reported from most parts of the world (Lateef et al., 2005; Gadahi et al., 2009; Cengiz et al., 2009; Bailey et al., 2009; Hassan et al., 2011). In Iran, this genus has been reported from various hosts including wild and domestic ruminants (Ghadirian et al., 1975; Ghadirian et al., 1977; Eslami et al., 1979; Eslami et al., 2000). Sheep is an important animal protein source in third world countries where veterinary care is much less than cows. So the prevalence of trichostrongylus in sheep improves control measures and reduces the mortality of the

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population. To describe species of sheep and also due to lack of sufficient information in this area, the author of this study performed on sheep Tabriz slaughterhouse.

Materials and Methods

Between September 2010 and July 2011, a total of 61 samples from the gut of the sheep were collected from a local slaughterhouse of Tabriz city and the samples were brought to the Tabriz Infectious and Tropical Diseases Research Centre. Samples were mainly collected from the abomasums, small and large intestines. The junction between small intestine to the large intestine and abomasums was ligated to prevent changing the contents of the area and to know the exact location of these parasitic species. The entire contents of the digestive system were examined and washed the contents with sieve No. 100. To identify species of *Trichostrongylus*, they were fixed in 70% alcohol and then were observed under the stereoscope. Azocarmin staining was performed to differentiate sexes. For the measurement of worms, microscope was equipped with a calibrated ocular lens. Average 10 worms were measured and were identified with the help of diagnostic key (Skrjabin et al., 1960).

Results

A total of 20 (32.8%) out of 61 samples were found positive for at least one of the *Trichostrongylus*. Percent prevalence for *T. vitrinus*, *T. colobriformis* and *T. probolorus* were 16.4, 9.8 and 6.6% respectively. The width, spicule length, gubernaculums length were significantly high in *T. vitrinus* (Table 1).

Table 1: **Morphometrical measurements of different species of *Trichostrongylus* (male isolate) identified in sheep in Tabriz, Iran**

Parameter	*T. probolorus*	*T. colubriformis*	*T. vitrinus*
Length (mm)	5.33± 0.23	5.15±0.11	5.5±0.14
Width (µm)	94±5.64[b]	98±4.54[b]	100±5.98[a]
Spicule length (µm)	132±10.18[b]	131.5±13.25[b]	169±12.34[a]
Gubernaculum length (µm)	73.50±11.10[b]	71.5±14.89[b]	86±8.97[a]

Spicules are much thicker than other species and dark brown with two triangularbulges in the abdominal. Spicules were of approximately equal length and gubernaculums brown transparent.

Discussion

Trichostrongylus nematode causing *Trichostro- ngylosis* is a common parasitic disease in domestic and wild ruminants and human (Ghadirian et al., 1977). These

Fig. 1: Pictures of spicules of different species of *Trichostrongylus* identified

Trichostrongylus colobriformis (a)
The gap back rib is close in the bottom and each branch is divided into two branches. Spicules slightly unequal length and have a certain structure. Spicules are small boat form.
Trichostrongylus vitrinus (b)
Balb mating was large and two spicules were equal in size, straight, short, light brown the colour was light brown.
Trichostrongylus proboloros (c)

parasites cause reduced growth, body weight loss, chronic diarrhoea and other intestinal disorders in sheep. Trichostrongyliasis has been reported from various parts of the world including Iran. In a report from Gambia, 97% sheep and goat were infected with *Trichostrongylus* (Fritsche et al., 1993). In a similar study in Nigeria 63.8% of cattle were infected with *Trichostrongylus* (Fakae et al., 1990). Report from Turkey also showed infection rate of about 55% (Cengiz et al., 2009). In another study, *T. probolorus, T. vitrinus,* and *T. colubriformis* were reported from Armenia (Kalantarian et al., 1943). Most infections in sheep reported from different areas of South Australia were caused by *Trichostrongylus axei* and *Trichostrongylus circumcinicta* (Beveridge et al., 1982).

In the present study, three different species of Trichostrongylus including *T. probolorus*, *T. vitrinus, Trichostrongylus vitrinus* and *T. colobriformis* were isolated and identified. In this study, the rate of *Trichostrongylus* infection in sheep slaughtered in Tabriz abattoirs was found to be more than the previous study (Ghadirian et al., 1977) and the current results indicate that the three species are still present in this area. The diversity of species in our study is less than other reports from the other Iranian cities (Ghasemikhah et al., 2011). In the present study, the width, specule and gubernaculum length of *T. vitrinus* was significantly high. Similar results were reported by Ghasemikhah et al. (2011).

The data in the current research work may provide baseline for the future strategies of controlling of this parasites.

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