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Phenotyping and Prevalence of *Haemonchus contortus* (Nematoda: Trichostrongylidae) in Ruminants from Endemic Areas of Pakistan: Influence of Host Species and Geographical Area on Phenotypic Traits of Worms

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Abstract

The objectives of the current study were to find the prevalence and phenotyping of adult *Haemonchus contortus* in sheep, goats and cattle from different geographical areas of Pakistan. We used 300 abomasa collected from slaughtered animals with total worm burden of 1950 and only adult worms were used for morphological measurements. Microscopic method was applied on the standardized measurements. The *H. contortus* size variations were studied by multivariate analyses. The result showed the prevalence of infection was 46.66% (140/300), with sheep (55%), goats (50%) and cattle (35%). The gubemaculum lengths, cuticular ridges and esophagus length of the worms showed significant ($P < 0.05$) difference among three host species. The linguiform morphs were predominant in goats (72%), cattle (70%) and sheep (64%) followed by knobbed and smooth morph. The size variation on phenotypic traits showed principal component I (PCI) 60% and second principal component (PCII) 34% due to geographical areas and the host species. The result reported 14 numbers of isolates shared by sheep, goats and cattle demonstrating the close relationship between domestic animals epidemiology. The study concluded that Punjab province and its adjoining areas are under a high burden of *Haemonchus* infection in livestock animals. Furthermore, it suggests that due to existence of multiple isolates of *Haemonchus* species problem of anthelmintic resistance occurs which demands further investigation.

Key words: Haemonchosis, Multivariate analysis, Pakistan, Phenotyping, Ruminants



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