Endoparasites in cattle nearby tribal areas of free-ranging protected areas of Tamil Nadu state

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Abstract Fresh dung samples from cattle nearby and tribal areas of free-ranging regions, Mudumalai Tiger Reserve, Anamalai Tiger Reserve and forest divisions of Sathyamangalam-Erode of Tamil Nadu state were examined for identification of endoparasitic infection. A total of 50 dung samples were collected and examination of samples revealed the presence of eggs of Strongyle, *Strongyloides* sp., amphistomes, *Toxocara* sp. and oocysts of *Eimeria* sp. The risk of parasitic disease transmission from domestic livestock to wild populations was discussed.

Keywords Cattle · Endoparasites · Free-ranging regions · Tamil Nadu

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Introduction

Livestock grazing is a major biotic interference in forest corridors. The occurrence of various endoparasitic infections in co-grazing cattle may lead to the spread of various helminthic infections to the other existing herbivores as well as to the wild herbivores in the protected areas. In this context, it could be ascertained that information on all these co-grazing cattle are required towards assessment of health status, indirectly to wild populations. Fevre et al. (2006) observed that movements of livestock to protected areas entailed zoonotic risks and introduction of pathogens to disease free areas and measures have been suggested to reduce livestock population and implement eco development packages for the long-term conservation of the wild populations. The present research paper communicates the parasitic infection of co-grazing cattle nearby and tribal areas of free-ranging regions of Tamil Nadu state, India.

Materials and methods

Collection and microscopic examination of samples

Fresh dung samples were collected from the co-grazing cattle of tribal areas in polythene covers. Dung samples were also collected in 10 % formalin and brought to the laboratory at Department of Wildlife Science, Madras Veterinary College, Chennai for coprological examination using sedimentation and floatation techniques as described by Soulsby (1982). A total of 50 dung samples were collected from cattle in this study. About 2 g of dung material was placed in a 100 ml beaker and was subsequently emulsified completely with 10–15 ml of water, strained and then centrifuged. A drop of sediment was examined

under both low and high power objectives, microscopically. Saturated common salt solution was used in Willi's floatation method of faecal examination.

Results

Among microscopic examination of dung samples of co-grazing cattle revealed the presence of 26 % *Strongyloides* sp. infection (Fig. 1), 24 % strongyle and amphistome infection each (Figs. 2, 3), 14 % of *Toxocara* sp. infection (Fig. 4) and 12 % of *Eimeria* sp. infections (Fig. 5).

Discussion

The overall endoparasitic infections in the co-grazing cattle revealed the presence of *Strongyloides* sp. (26 %), strongyle eggs (24 %), amphistomes (24 %), *Toxocara* sp. (14 %) and oocysts of *Eimeria* sp. (12 %). However in this context, it is noteworthy to mention that cross-transmission between domestic and wild ruminants was reported by Thronton et al. (1973). It is also to be accounted that the incidence of parasitism in wild herbivores was reported to be more in areas co-grazed by cattle, than in areas in which co-grazing was not observed (Dharamarajan et al. 2005).

Varman et al. (1993) reported that the estimated cattle population in Mudumalai Wildlife Sanctuary was 10,000–12,000 and these cattle were let loose into the sanctuary and adjoining forest areas and on an average each animal required 17–20 kg feed per day and in addition, the presence of large number of domestic animals might spread cattle borne diseases on to the wildlife populations. Morgan et al. (2006) reported that gastrointestinal nematode infections were the main risks associated with infections from livestock, in addition to foot and mouth disease.

Fig. 1 Endoparasites in cattle faeces egg of *Strongyloides* sp. (×40)

Fig. 2 Strongyle egg (×40)

Fig. 3 Amphistome egg (×40)

Fig. 4 Egg of *Toxocara* sp. (×40)

Fig. 5 Oocysts of *Eimeria* sp. ($\times 40$)

Perhaps, the competitions for feed-resources might get highly minimized during the livestock pressure in the protected regions. However, in the contrary, proper deworming schedule with approved and broad spectrum anthelmintic drug may be adopted in case of cattle and other herbivores reared nearby and tribal areas of free-ranging regions for prevention of spread of parasitic diseases in wild herbivores population.

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