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SHORT COMMUNICATION

Gastro-intestinal Helminths in a Natural Population of *Macaca sinica* and *Presbytis* spp. at Polonnaruwa, Sri Lanka

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ABSTRACT. Helminth parasites were identified in a natural population of primates at Polonnaruwa, Sri Lanka. Five fatally wounded or recently deceased toque macaques (*Macaca sinica*) and three langurs (*Presbytis senex* and *P. entellus*) were autopsied. The following nematodes were found: *Oesophagostomum aculeatum* (Chabertiidae), *Streptopharagus pigmentata* (Spirocercidae), *Physaloptera* sp. (Spiruridae), *Enterobius vermicularis* (Oxyuridae), and *Trichuris trichiura* (Trichuridae). One cestode, *Hymenolepis* was also recovered from *P. entellus*. Among fresh faecal samples of 210 *M. sinica*, worm eggs of *Oesophagostomum* and *Strongyloides* were most abundant, followed by *Trichostrongylus*. *Trichuris* and *Streptopharagus* eggs were found occasionally.

Key Words: Helminths; Parasites; *Macaca sinica*; *Presbytis* spp.; Sri Lanka.

INTRODUCTION

The use of non-human primates in biomedical research has prompted a need for more information on the natural diseases of these species (DUNN, 1970; REMFRY, 1978). The study of these diseases is not only required for preventive medicine in primate colonies, but also for management and conservation of primate populations (COLLET et al., 1986). Knowledge of natural diseases in non-human primates may help in the understanding of behavioural and other mechanisms of defense. Moreover, several parasites are shared by man and non-human primates (CHITWOOD, 1970). Data on natural parasitic infections of non-human primates can indicate which of the parasites are potentially zoonotic. Finally, the importance of non-human primates as laboratory models in studying host-parasite systems should not be underestimated (ORIHEL, 1970).

The Polonnaruwa Sanctuary, in Sri Lanka, provides a natural environment for the four species of primates that are native to the Sri Lankan dry zone forest. These are the toque macaque (*Macaca sinica sinica*), the gray langur (*Presbytis entellus thersites*), the purple-faced langur (*P. senex senex*) as well as the nocturnal loris (*Loris tardigradus*). The demography, ecology, and behaviour of these primates have been studied since 1967, with intensive longitudinal attention to the macaques (DITTUS, 1975, 1988). The present study deals with the identification of gastro-intestinal helminth parasites in the macaque and langur species as revealed by autopsies as well as fecal examinations.

MATERIALS AND METHODS

STUDY AREA AND HABITAT

The study area is situated in the Polonnaruwa Archaeological Reserve and Nature Sanctuary in the Dry Zone of Sri Lanka and has been described by DITTUS (1977).

The sanctuary is bordered by a lake, an irrigation channel, and cultivated and abandoned lands and is partly surrounded by small villages. The home range of several monkey troops extends to the human settlements. Areas surrounding archaeological sites are frequented by tourists as well as excavation crews.

STUDY ANIMALS

Of the three diurnal primates, toque macaques (*Macaca sinica*) are frugivorous-omnivorous, while both gray langurs (*Presbytis entellus*) and purple-faced langurs (*P. senex*) are folivorous. Toque macaques and gray langurs use both ground and arboreal vegetation for foraging, but the purple-faced langur is mostly arboreal.

Fresh faeces were collected from 210 toque macaques of both sexes and all ages.

PARASITOLOGICAL TECHNIQUES

Five fatally wounded or recently deceased toque macaques and three langurs were examined for adult worms. Nematodes were killed in hot 70% alcohol. Representative samples were fixed and sent to the Parasitic Worm Division of the Natural History Museum, London, for identification.

Faeces were stored at 4°C and examined within 12 hr after collection. The parasite ova were identified microscopically after being concentrated using the saturated salt technique. Faeces were cultured using the filter technique, according to HARADI and MORI (1955), and filariform larvae were identified.

RESULTS

Autopsy was performed on eight animals, five macaques, two gray langurs, and one purple-faced langur (Tables 1a & 1b).

One ailing gray langur, that died a few hours after it was brought to the laboratory, had more than 500 adult *Oesophagostomum* worms. Dark pigmented nodules and cauliflower-like lesions appeared on the serosa side of the large intestine and caecum. Generalized peritonitis and maceration were also observed.

The results of the coprological examinations are presented in Table 2.

Although *Oesophagostomum* eggs and *Trichostrongylus* eggs are both partly embryonated when shed, they can be distinguished by the following criteria: *Trichostrongylus* eggs (length × width: 88 μm × 45 μm) are slightly bigger than those of *Oesophagostomum* (length × width: 65 μm × 42 μm) (REMFRY, 1982). *Trichostrongylus* eggs have one rounded and one slightly pointed end, while *Oesophagostomum* eggs are symmetrical. Third stage larvae of *Oesophagostomum* and *Trichostrongylus* can easily be distinguished after coproculture. *Oesophagostomum* larvae are very large (length 920 μm) and have a long filamentous extension of the sheath beyond the larva (260 μm). They contain 32 intestinal cells. *Trichostrongylus* L3 larvae are 680 μm long and have a short extension of the sheath (45 μm). *Trichostrongylus* larvae contain 16 intestinal cells.