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PREVALENCE OF GASTROINTESTINAL NEMATODES AND FAECAL EGG INTENSITY IN FARMED SAMBAR DEER (*CERVUS UNICOLOR*) FROM WILDLIFE CONSERVATION CENTRE, MALAYSIAN DEPARTMENT OF WILDLIFE AND NATIONAL PARK, SUNGKAI, PERAK

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Abstrak: Kiraan telur cacing dalam tinja dan prevalens nematod gastrousus dalam rusa sambar dari Pusat Pemuliharaan Hidupan Liar, Jabatan Perlindungan Hidupan Liar dan Taman Negara Malaysia, Sungkai, Perak telah dikaji pada Mei 2003 hingga April 2004. Pada amnya, kiraan telur adalah rendah, dengan nilai 360.0 ± 61.5. Tiga spesies nematod dijumpai dalam kultur larva. *Trichostrongylus* spp. adalah nematod yang dominan dan terdiri daripada 58% larva daripada kultur tinja. *Cooperia* spp. dan *Oesophagostomum* spp. kurang dominan, dan melibatkan 30% dan 12% daripada jumlah populasi kultur larva, masing-masing.

Abstract: Faecal worm egg counts dan the prevalence of gastrointestinal nematodes in sambar deer from Wildlife Conservation Centre, Malaysian Department of Wildlife and National Park, Sungkai, Perak were investigated during May 2003 until April 2004. Generally, the egg counts were low; the mean epg value was 360.8 ± 61.5. Three species of nematodes were found from the larval cultures. *Trichostrongylus* spp. was the dominant nematode, it comprised 58% of the nematodes in faecal cultures. *Cooperia* spp. and *Oesophagostomum* spp. were less dominant, and comprised 30% and 12% of the total larval culture population, respectively.

Keywords: Sambar Deer, Gastrointestinal Nematodes, Faecal Egg Counts

INTRODUCTION

In Malaysia, very little has been reported on gastrointestinal parasites of sambar deer. An early report on parasites of deer was that by Habsah (1983). Some faecal samples had been collected from sambar and barking deers from Krau and Sungkai, but were reported to be negative for parasites. Habsah (1984) had also reported negative findings of parasites in lung and heart of sambar deers. Elsewhere, gastrointestinal parasites have been reported in several Cervidae ruminants: in Hawaii (Ash 1961), Germany (Barth & Matzke 1984), Poland (Drodz 1966, 2001) and Chakraborty (1994). Obviously data on gastrointestinal parasites of our local animals is lacking and needs to be investigated.

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MATERIALS AND METHODS

Faecal samples were collected from fresh droppings of sambar deer once a month during May 2003 until April 2004. The number of trichostrongylid nematode eggs per gram faeces (epg) was estimated using a modified McMaster technique (Whitlock 1948) using saturated sodium chloride flotation method. Two replicates were carried out and the mean recorded. The remainder of the faecal samples were used for cultures. Faecal samples were broken into pieces in a petri dish partially filled with distilled water; and smeared on a wet filter paper of approximately 14 × 12 cm size, but leaving about 4 cm of each end free. The filter paper was then rolled and placed into a glass tube 210 mm × 30 mm diameter, half-filled with 3 ml of distilled water, closed with a rubber stopper and incubated at 30ºC for 7 days. After incubation, the filter paper was removed from the test tube and the sides of the tube were washed with distilled water to wash down any larvae to the bottom of the test tube. One hundred third-stage larvae taken at random from the cultures were identified according to the descriptions of Dikmans and Andrews (1939) and Gordon (1933).

RESULTS

Faecal egg counts were generally low throughout the 12 months (Fig. 1). The lowest epg value was 360.0 ± 61.5. The lowest count was observed in March 2004 with 195 epg, while the highest was in November 2003 with 555 epg. From June 2003 until November 2003, epg increased from 300 to 555. However between December 2003 to March 2004, it declined from 395–195 epg.

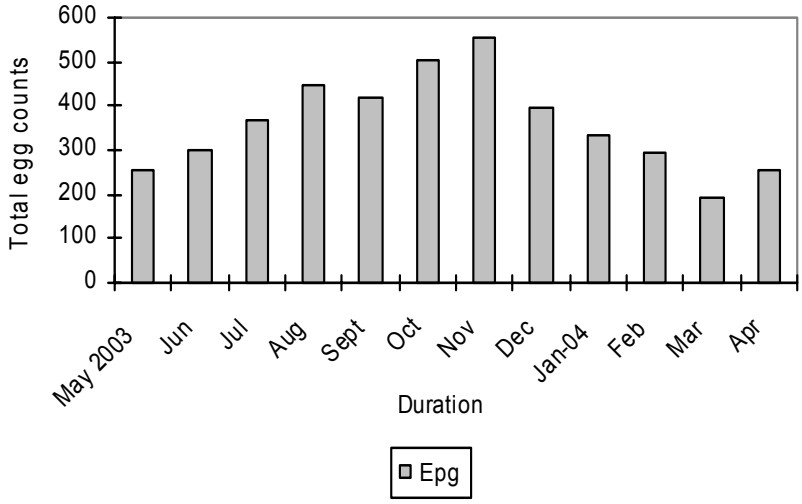

Figure1: Faecal egg counts of sambar deer.

Three species of nematode worms were recovered from faecal cultures: *Trichostrongylus* spp., *Cooperia* spp. and *Oesophagostomum* spp. (Fig. 2). *Trichostrongylus* spp. comprised 58% of the total larval population. Meanwhile *Cooperia* spp. was less common and made up 30% of the larval population. The least common nematode was *Oesophagostomum* spp. with a prevalence rate of 12% of the total larval population.

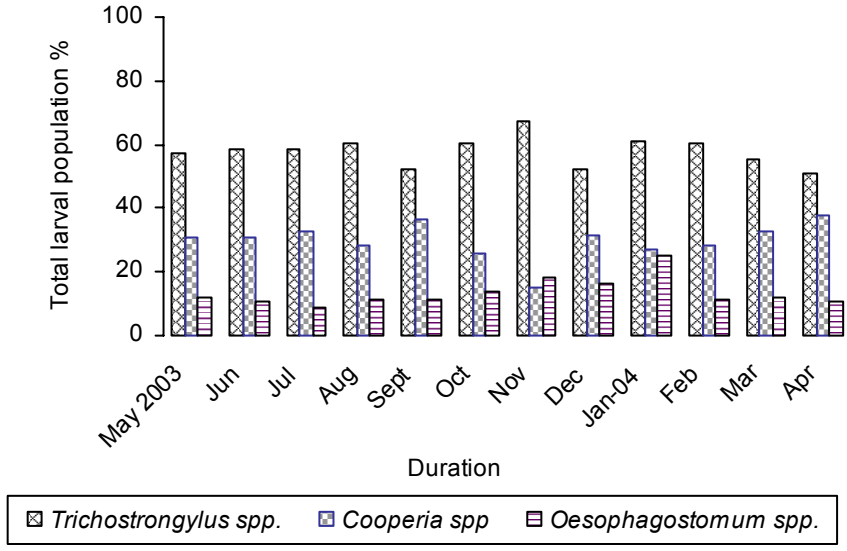

Figure 2: Generic composition (%) of infective larvae recovered from culture of faeces obtained monthly from sambar deer.

DISCUSSION

Generally the mean value of epg is very low for the 12 months of research period. Sambar deers are selective on the types of grass they feed on. This habit seemed to minimize their infection by worms. Besides that, supplementary feedings by the workers generally contributed to the low mean value. Hunter (1953) suggested diet supplementation as a method to prevent the establishment of helminths or as a cure for diseases caused by helminths. According to Leng (1991), supplementary feedings indirectly change the physiology of rumen and at the same time, it can reduce the infection of nematode worms. It also increases the ability of the sambar deer to overcome the infection. This probably explained low epg values (< 500 epg) throughout the 12 months of research. It is interesting to note that epg values increased steadily from June to November 2003, but declined from December 2003 to March 2004. The drier months during the latter part of the study period probably explained lower epg values as compared to the wet months during the earlier part of the study period.

Trichostrongylus spp. was the dominant species infecting the sambar deer. Populations of *Trichostrongylus* spp. larvae were generally higher when compared to that of *Cooperia* spp. and *Oesophagostomum* spp. The generation interval of *Trichostrongylus* spp. is short (22–24 days) (Crofton 1971) and that gives an advantage to its population to increase in a shorter period of time. Besides that, the ability of its larvae to generally withstand the environmental pressure helps them to become the dominant species (Soulsby 1965). *Cooperia* spp. too has a short generation time (14 days) when compared to *Trichostrongylus* spp. but its ability to withstand environmental pressure is low. Its larvae are not able to survive in extreme climates and thus may explain why its population was less dominant. Furthermore it does not produce many eggs (Kates 1947; Crofton 1963; Nickel 1965). *Oesophagostomum* spp. has a high fecundity constant but with a long generation interval which is 49 days (Crofton 1957). This would probably explain its lower prevalence when compared to *Trichostrongylus* spp.

It has been reported previously that the Malaysian sambar deers were negative for parasites (Habsah 1983, 1984) and thus the results of this research could be a basis for comparison for further studies in the country.

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