Short Communication / Kısa Bilimsel Çalışma

Eimeria species (Apicomplexa: Eimeriidae) detected from the Anatolian ground squirrel, Spermophilus xanthophrymnus (Rodentia: Sciuridae) in Niğde province, Turkey

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Summary: Intestinal contents of 105 Anatolian ground squirrels (Spermophilus xanthophrymnus) caught from Niğde province were examined to determine the types and prevalence of eimerian species. Eimerian oocysts were found in 27.6 % of all the samples examined by sucrose-flotation. Four species were recovered from Anatolian ground squirrels, including Eimeria callospermophili (prevalence: 25.7 %), E. morainensis (2.8 %), E. pseudospermophili (1.9 %), and E. lateralis (0.9 %).

Key words: Eimeria, prevalence, Spermophilus xanthophrymnus

In a recent review of the coccidian parasites of rodents, Levine and Ivens (4) reported 17 named and two unnamed species of Eimeria from 18 species of ground squirrels, Spermophilus spp. There is little information on the coccidian parasites of squirrels in Turkey (1, 2, 9). In this paper, we report prevalence of coccidia in Anatolian ground squirrel in Niğde province and S. xanthophrymnus to be host for E. pseudospermophili.

The study was conducted in Niğde (38º 58’ N and 33º 10’ E) province of Turkey, between April and August 2003. The Anatolian ground squirrels (65 adult females and 40 adult males) were captured and brought alive to the laboratory in a cage. Fecal samples collected from each animal were put into a solution of 2.5 % equeous (w/v) potassium dichromate (K₂Cr₂O₇) and were allowed to sporulate. Oocysts were concentrated by flotation in saturated sucrose solution (specific gravity: 1.2). At least 30 sporulated oocysts from each sample were measured by ocular micrometer of Nikon Eclipse i-Series 80 i trinocular research microscope with 100 x magnification. Oocyst identification was done according to Levine and Ivens (4).

Four species of Eimeria were identified from the faecal samples of 105 Anatolian ground squirrels (Spermophilus xanthophrymnus). The species detected and their prevalence were Eimeria callospermophili (25.7 %), E. morainensis (2.8 %), E. pseudospermophili (1.9 %) and E. lateralis (0.9 %). The morphological characteristics of the various sporulated oocysts are shown in Fig.1.

Of 105 the animals examined, 29 (27.6 %) were found positive for eimerian oocysts. Of 105 animals, 25 (23.8 %) were found to be infected with single and 4 (3.8 %) with two species.

Eimeria callospermophili is one of the most ubiquitous species of coccidia. It has been reported from numerous host species and localities, including Richardson’s ground squirrels, S. richardsonii from Alberta (6), Townsend’s ground squirrels, S. townsendii from Idaho (10), Wyoming ground squirrel, S. elegans elegans from southern Wyoming (5), black prairie dogs, Cynomys ludovicianus and white-tailed prairie dogs, C. leucurus from Wyoming (7). In addition, arctic ground squirrels, S. parryii have been infected with this species.
coccidium in Alaska and Siberia (8). In Turkey, this species was identified from the faecal samples of 7 Anatolian ground squirrels from Niğde province (9).

_Eimeria lateralis_ originally described by Levine et al. (3) from Spermophilus lateralis has since been reported twice from _S. richardsonii_ in Alberta (6). Wilber et al. (10) detected this species in fecal samples from _S. townsendii_ in Idaho. _Eimeria lateralis_ was also identified from _C. ludovicianus, C. leucurus_ in Wyoming (7), from Anatolian ground squirrels, _S. xanthophrymnus_ in Turkey (9).

_Eimeria morainensis_ has been reported previously from Townsend’s ground squirrels, _S. townsendii_ in Idaho (10), from Richardson’s ground squirrels, _S. richardsonii_ in Alberta (6), from Wyoming ground squirrel, _S. elegans elegans_ in southern Wyoming (5), from _C. ludovicianus and C. leucurus_ in central and southeast Wyoming (7). _Eimeria morainensis_ was also reported from arctic ground squirrels, _S. parryii_ in Alaska and Siberia (8), and from Anatolian ground squirrels, _S. xanthophrymnus_ in Turkey (9).

_Eimeria pseudospermophili_ was recently described from Townsend’s ground squirrels, _S. townsendii_ in Idaho (10). It has also been reported infecting black prairie dogs, _C. ludovicianus_ from Wyoming (7). _Eimeria pseudospermophili_ recovered from Anatolian ground squirrels represent new host and a new geographic record.

Stanton et al. (5) suggested that of all _E. elegans elegans_ examined, 69 % harbored 1 or more of 6 species of _Eimeria_. Stanton et al. (5) reported that squirrels in relatively mesic habitats have a higher prevalence of infection than do those in xeric habitats. According to these investigators (5), oocyst survivorship is expected to be higher more dense vegetation cover may offer some protection from high temperatures, UV radiation, and desiccation. For the same reasons as stated above (5), increased oocyst survivorship should increase the number 2-6 species infections. In this study, the prevalence of eimerian oocysts in faecal samples was 27.6 % for _S. xanthophrymnus_ and individuals were infected with from 1 to 2 species with infections of 1 species most common (23.8 %). The low prevalence of infection and the low multispecies infection rates is probably due to xeric habitats, and the immune response of the host.

References


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