

The South American opossum, *Didelphis aurita*, from Brazil as another definitive host for *Sarcocystis falcatula*-like

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Opossums (*Didelphis* species) from the Americas have been identified as the definitive host of several species of *Sarcocystis* that cause clinical disease and sometimes death in a variety of avian and mammalian intermediate hosts. This study was done to identify the *Sarcocystis* species that infect opossums, *Didelphis aurita*. Sporocysts were obtained from intestinal tracts of 8 of 13 *D. aurita* opossums trapped near Campos dos Goytacazes city in Rio de Janeiro state, Brazil. The small intestinal epithelium was scraped off and digested in 10% bleach and processed to obtain sporocysts. These sporocysts were orally inoculated into budgerigars (*Melopsittacus undulatus*) and nude mice (Balb/c, *Mus musculus*) to determine if they were infective for birds, mammals or both. At necropsy, portions of organs and muscles were fixed in 10% buffered formalin and processed for histology, immunohistochemistry and transmission electron microscopy (TEM). Additionally, tissues were stored in absolute alcohol for PCR using primers JNB 33/54 (*S. falcatula*/*S. neurona* complex) and ITS (all *Sarcocystis* species). African green monkey, *Cercopithecus aethiops*, kidney cells were used as host cells and amplification products produced by JNB 33/54 primers were subjected to RFLP using restriction endonucleases *Dra*I and *Hinf*I. Some birds developed clinical signs and died 6, 7, 13, 16 and 24 days after inoculation (DAI). All other birds and all mice were euthanized 60 DAI. None of the inoculated mice developed clinical signs and sarcocysts were not observed in their muscles by PCR and histology. Schizonts were observed in the lungs using histology and immunostaining in birds examined prior to 60 DAI. Sarcocysts with a ~1.5 µm thick wall were found in the breast, thigh and tongue of some birds. Immature sarcocysts were observed in the thigh of one bird using TEM. The cyst wall contained villar-like protrusions of the parasitophorous vacuolar membrane that contained microtubules extending in to the underlying granular layer and surrounded groups of pleomorphic merozoites. Tissues and cell cultures were positive by PCR with both primer pairs. RFLP on the JNB product cut with both restriction enzymes indicating a *S. falcatula*-Argentina like species was present. This is the first report of *D. aurita* being a definitive host for *S. falcatula*-Argentina like sporocysts.

Key words: *Sarcocystis* sp., cysts, cell culture, RFLP