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First identification of *Sarcocystis* spp. in synanthropic and wild rodents from Argentina

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Sarcocystis spp. are cyst-forming intracellular protozoan parasites with an obligate two-host prey-predator type life cycle. *Sarcocystis* spp. in muscles of different rodent species have been described in several countries. The objective of this study was to determine the presence of *Sarcocystis* spp. in synanthropic and wild rodents from rural areas in the Humid Pampa Region, Argentina. A total of 158 rodents were captured, euthanized and sampled from dairy cattle farms between 2021 and 2022. The animals were 107 synanthropic (103: *Mus musculus*, 3: *Rattus rattus*, and 1: *R. norvegicus*) and 51 wild rodents (28: *Oxymycterus rufus*, 12: *Necomys lasiurus* and 11: *Akodon azarae*). Samples of different skeletal muscles (tongue, masseter, heart, and semitendinosus) were collected and assessed by histopathological analysis and homogenization followed by direct microscopic examination. Also, PCR targeting a 18S rRNA gene fragment and the internal transcribed spacer 1 (ITS1) were performed from muscles homogenates from *Sarcocystis* spp. microscopically positive samples. The positive amplicons were further sequenced and analysed. Histopathology and direct microscopy revealed the presence of thin-walled cysts consistent with *Sarcocystis* spp. in 12.6% (20/158) of rodents. *Sarcocysts* were more frequently observed in semitendinosus muscle (8 *M. musculus*, 6 *O. rufus*, 2 *A. azarae*, 2 *N. lasiurus*), followed by the masseter (5 *O. rufus*, 3 *M. musculus*, 1 *N. lasiurus*), heart (1 *M. musculus*, 1 *N. lasiurus*) and tongue (1 *M. musculus*). By 18S rRNA fragment PCR 16/20 samples were positive, and seven were selected for further ITS1 PCR and sequencing. Six of the 18S rRNA sequences showed a 99.48-99.64% identity with *S. dispersa* (3 *M. musculus*, 1 *A. azarae*, 1 *N. lasiurus* and 1 *O. rufus*) a species with a rodent-owl cycle, and one (*O. rufus*) was only 95.5-96.6% similar to other *Sarcocystis* spp. The last sample showed a 100% identity with *S. attenuati* at ITS1 sequence fragment (954bp), a species with snakes as putative definitive hosts. The remaining ITS1 sequences (around 1450 bp) showed a high similarity among them and a 100% identity with several *Sarcocystis* spp. but with a low coverage (10-13%), possible due to the lack of ITS1 sequences in the database. Our results indicate a relatively high proportion of *S. dispersa*-like in different rodents from Argentina, potentially related with an owl predation of rodents. In addition, a *S. attenuati*-like species was detected in a *O. rufus*, suggesting a potential rodent-snake cycle. This is the first study to identify *Sarcocystis* spp. by molecular methods in rodents from Argentina and probably the first report of ITS1 sequences for *S. dispersa*-like. Further studies are needed to unravel the role of synanthropic and wild rodents in the epidemiology of cyst forming coccidia parasites.