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MOLECULAR DETECTION OF PARACOCCIDIOIDES SPP. IN TISSUE SAMPLES OF ROAD-KILLED XENARTHRANS IN MATO GROSSO DO SUL

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RESUMO

Paracoccidioidomycosis (PCM) is the most relevant systemic endemic mycosis in Latin America, especially in Brazil. The etiological agents are dimorphic fungi of Paracoccidioides genus, such as P. brasiliensis and P. lutzii, whose ecology is still poorly understood. The main form of the disease (chronic, affecting adults) presents a prolonged period of latency and the fungus is very difficult to be isolated directly from its natural habitats (probably in soil). The confirmation that some Xenarthra species are naturally infected by the fungus in the endemic area, associated with advances in molecular techniques that enable the fungus detection without the need of culturing it, opened new opportunities to pinpoint the whereabouts of the pathogen in nature. In the current study, different tissue samples (mesenteric lymph nodes, lung, spleen and liver) of 43 road-killed xenarthrans from Mato Grosso do Sul (Brazil) were evaluated, using the Nested PCR technique with internal primers that amplifies the ITS1 and ITS2 regions of rDNA of both Paracoccidioides species. All samples analyzed were collected and provided by the Anteaters & Highways project; of which 28 were giant anteaters (Myrmecophaga tridactyla), 4 six-banded armadillos (Euphractus sexcintus), 4 southern tamanduas (Tamandua tetradactyla), 3 nine-banded armadillos (D. novemcinctus), 2 southern naked-tailed armadillos (Cabassous unicinctus) and 2 giant armadillos (Priodontes maximus). Nested-PCR showed the presence of Paracoccidioides spp. in 15 of the 43 analyzed animals, being the mesenteric lymph nodes and lung tissues the organs with the highest positivity. Among the animal species, the positivity for P. brasiliensis were 35.7% in the giant anteaters (10 positive out of 28 evaluated), 75% in the nine-banded armadillos (2 positive out of 3 evaluated), and 50% in the southern tamanduas (2 positive out of 4 evaluated) and in the southern naked-tailed armadillos (1 positive out of 2 evaluated). Concerning the six-banded armadillos (4 animals evaluated) and the giant armadillos (2 animals evaluated), the Nested-PCR amplifications were negatives for P. brasiliensis. The sequencing of the amplicons allowed the molecular identification of Paracoccidioides species that occur in these animals, in which only P. brasiliensis was detected. It is known that, in Mato Grosso do Sul, human PCM is caused by P. brasiliensis and P. lutzii, but it seems, that from environmental samples, there is a difficulty in isolating and detecting P. lutzii that is not fully understood. The several meanings of Paracoccidioides infection in the xenarthrans still needs to be properly investigated. While armadillos are culturally used for human consumption

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in many PCM endemic areas, the same does not hold true for anteaters. Armadillos and anteaters present some common physiological and ecological features, such as low body temperature, less active cellular immunity and fossorial habits that might contribute to their infections by pathogens dwelling in soil. Nevertheless, further studies would be needed to clarify these points, including the potential role of fungal infections as an additional threat for Xenarthra wild life preservation. (Support FAPESP Process 2019 / 02842-5 and Anteaters & Highways Project).

PALAVRAS-CHAVE: Keywords: Molecular identification, Paracoccidioides spp., Xenarthras.

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