

Application of soil fungi to the control of of eggs of *Toxascaris leonina* in feces of captive lynxes

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Despite the efficacy of several efficient anthelmintics commercially available, control of ascarids remains unsolved due to the occurrence of viable stages in the soil enhances the risk of challenge infections in animals and humans also. The effect of two soil filamentous fungi, *Mucor circinelloides* and *Verticillium* sp. on eggs of *Toxascaris leonina* passed in the feces of captive lynxes was examined. Two assays have been conducted, firstly fungal spores were added into 2% corn agar plates containing 200 eggs of *T. leonina*; secondly the spores were sprayed directly onto feces of captive lynxes (*Lynx lynx*) shedding eggs of the ascarid. The parasiticide activity was assessed by measuring the ovicidal and ovistatic effects.

In the plates added fungal spores, morphological damage of the eggshells comprising hyphal penetration, internal egg colonization and embryo alteration was observed under an optical microscope, thus an ovicidal type 3 activity was defined. By spraying spores of *M. circinelloides* or *Verticillium* sp. onto fecal pats, a significant reduction of viable eggs was recorded (65% and 81%, respectively). Development of *T. leonina* eggs was delayed in the presence of the soil fungi, at the stage of zygote mainly. It is concluded the effectiveness of the filamentous fungi *M. circinelloides* and *Verticillium* sp. to avoid the development of *T. leonina* eggs to the infective stage. Results obtained in the current investigation led us to conclude the usefulness of spreading spores of filamentous fungi as *M. circinelloides* or *Verticillium* sp. directly on feces of lynxes infected by *T. leonina*, to reduce the viability of their eggs and/or their development to the infective L2 stage, and thus the risk of infection by the ascarid. This procedure could provide a very useful tool to prevent challenge infection among wild captive animal species, which are

normally confined to the same parcel, and thus they can be exposed to higher levels of infection by parasites.

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