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Using the fungus *Arthrobotrys cladodes* var. *macroides* as a sustainable strategy to reduce numbers of infective larvae of bovine gastrointestinal parasitic nematodes

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Abstract

Research in the area of sanitation in ruminant production has focused on discovery of potential agents for biological control of helminths with nematophagous fungi and has provided evidence of success. The antagonistic potential of the fungus *Arthrobotrys cladodes* var. *macroides* on infective larvae of bovine gastrointestinal parasitic nematodes was evaluated by scanning electron microscopy. Additionally, an *in vivo* test of the resistance to digestive processes and viability of the fungus was carried out using a formulation based on sodium alginate administered orally in cattle. Production of conidia and chlamydospores was high. In *in vitro* tests, the number of infective nematode larvae was reduced 68.7% by the fungus in the treated group compared to the control group. The interaction between the fungus and the nematodes was confirmed by scanning electron microscopy. Plates containing fecal samples collected after oral administration of 100 grams of pellets containing the *A. cladodes* fungus showed that the fungus survived passage through the gastrointestinal tract of ruminants, grew on agar, formed traps and preyed on L₃ larvae of gastrointestinal parasites. The results of the present study provide a new opportunity for alternative, environmentally safe control of ruminant nematodes.

Keywords: *Arthrobotrys*, nematophagous fungi, ruminants, biological control

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