Nematophagous and enzymatic action of *Pleurotus djamor* on gastrointestinal parasitic nematodes of ruminants

Adriane Toledo da Silva [1*], Lisseth Bibiana Puentes Figueroa[1], Debora Castro de Souza [1], Tiago Facury Moreira[2], Eustáquio Souza Dias [3], Filippe Elias de Freitas Soares [1]

[1] *Departamento de Química, Laboratório de Biotecnologia e Bioquímica Aplicada, Universidade Federal de Lavras*
[2] *Departamento de Medicina Veterinária, Universidade Federal de Minas Gerais*
[3] *Departamento de Biologia, Universidade Federal de Lavras*
** Corresponding author. E-mail: adriane.silva5@estudante.ufla.br*

Parasitic gastrointestinal nematodes (GINs) cause diseases that significantly challenge livestock production. Chemical control is the most widely used method, but has many economic and environmental problems. In this context, new alternatives must be studied to manage these pests. This study proposes for the first time the use of a cell-free crude extract rich in proteases produced by the fungus *Pleurotus djamor* on infective larvae (L_3) of *Trichostrongylus* spp. and *Strongyloides* spp. The fungus was cultivated on wheat seeds, and fermentation occurred over 25 days. The enzymes were extracted from the solid medium with water in a 1:5 (solid: liquid) ratio. The cell-free crude extract was filtrated and centrifuged at 10,000 *g* for 10 min. Proteolytic activity was measured at pH 5 by the caseinolytic method. The nematicidal action of the crude extract was evaluated by three groups (control, active, and denatured) with six replicates. As a result of these experiments, the proteolytic activity obtained was 8.94 U/mL. *P. djamor* significantly reduced the number of L_3 by 75% ($p<0.01$) compared to the control group, while the active crude extract reduced the number of L_3 by 57%. The active extract differed significantly from the control group and the denatured extract ($p<0.01$). On the other hand, the control group (without enzymes) did not show a significant difference compared to the denatured extract. The proteases in the cell-free crude extract were important in the biochemical control of nematodes. In conclusion, this study shows the need to conduct *in vivo* tests to investigate the proteases produced by *P. djamor* as an alternative for controlling these pests.

Keywords: enzymes; *Pleurotus djamor*; biochemistry control.

Ação nematófaga e enzimática do *Pleurotus djamor* sobre nematoides parasitas gastrointestinais de ruminantes.
O controle químico dos parasitas gastrointestinais é o método mais utilizado, porém apresenta problemas econômicos e ambientais. Este trabalho testou o extrato bruto livre de células do cogumelo *Pleurotus djamor* sobre larvas infectantes (L_3) de *Trichostrongylus* spp. e *Strongyloides* spp. O ensaio nematófago reduziu 75% o número de L_3 ($p<0,01$), enquanto o extrato bruto livre de células reduziu 57% o número de L_3 ($p<0,01$). As proteases presentes no extrato bruto foram importantes no controle bioquímico dos nematoides. Estudos *in vivo* são necessários para investigar a viabilidade do uso do extrato bruto livre de células como alternativa ao controle químico.
Palavras-chave: Enzima; *Pleurotus djamor*; controle bioquímico.

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