

Exoenzymes and metabolites related to the nematicidal effect of rhizobacteria on *Xiphinema index* Thorne & Allen

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Resumen

AimsTo identify enzymes and metabolites in the rhizobacteria filtrates that have a nematicidal effect on *Xiphinema index* and perform molecular characterization of the strains evaluated.

Methods and ResultsA series of four bacteria selected for their nematicidal potential were considered for invitro, biochemical and molecular studies. The direct effect of the bacterial filtrates was evaluated invitro on *X.index* juveniles and adults. Hydrogen sulphide and hydrogen cyanide liberation and protease, chitinase, collagenase and lipase activity were verified in the strains. Up to five housekeeping genes and one ITS 16S-23S rRNA were analysed. All bacterial filtrates presented 54-100% mortality when evaluated during up to 72h of nematode exposure. Strains presented protease activity; two of them (strains FB833T and FR203A) showed reliable collagenase and chitinase activities, respectively, and three of them showed strong lipolytic activity (FB833T, FR203A and FS213P). Strain *Bacillus megaterium* FB133M had no lipase activity and presented the lowest nematicidal effect. *Bacillus amyloliquefaciens* FR203A had the largest lethal effect.

ConclusionThe rhizobacteria strains evaluated in this study possess nematicidal compounds, which may offer an interesting alternative for *X.index* control.

Significance and Impact of the StudyThis is the first report of exoenzymes and metabolites associated with nematicidal effect of rhizobacteria on *X.index*, which can be a possible alternative for control of this plant-parasitic nematode.

Palabras clave

Palabras clave de autor: *Bacillus*; biological control; nematicidal exoenzymes; nematicidal metabolites; plant-parasitic nematodes

KeyWords Plus: ROOT-KNOT NEMATODE; BACILLUS-CEREUS GROUP; PLANT-PARASITIC NEMATODES; NEIGHBOR-JOINING METHOD; MELOIDOGYNE-INCOGNITA; BIOLOGICAL-

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