

Compounds produced by plants and bacteria for the control of the plant-parasitic nematode *Pratylenchus penetrans*

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Potato (*Solanum tuberosum*) is one of the world's most common agricultural crop for human consumption and considered an excellent source of essential nutrients and vitamins. The productivity of this crop is threatened by several plant-parasitic nematodes, among which the root-lesion nematode *Pratylenchus penetrans* is considered to have a significant impact. This organism is extremely difficult to eradicate and control procedures are expensive and hazardous to the environment and human health. Natural compounds have gained an increasingly importance as chemical substitutes; however, their effect towards plants is largely unknown. Our main goal is to identify naturally-produced compounds able to control *P. penetrans* and simultaneously non-harm plant host. The research plan includes: (1) *in vitro* bioassays of plant and bacterial compounds for biological control of *P. penetrans*; (2) greenhouse trials to test the selected compounds in potato cultures under nematode presence with evaluation of plant physiological response and volatile profile; and (3) preliminary studies in nematode transcriptomic changes and molecular pathways during the response to the nematicidal compounds. Results will be an add-value to the continuous investigation on environmental-friendly substances for the suppression of plant parasitic nematodes.

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