Talk

Entoleuca sp. as a tool for decreasing the pathogenicity of almond wood fungi

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ABSTRACT

Motivation: The almond crop has a high socio-economic importance in Spain. The intensification of its management, aimed at increasing productivity, coupled with the current climate change scenario is increasing the incidence of canker diseases in almond. Botryosphaeria dieback is a fungal disease that is increasingly threatening almond and other woody crops worldwide [1]. The causal agents are fungi of the Botryosphaeriaceae family, being Neofusicoccum parvum one of the most virulent species. The limitations in the use of chemical fungicides, due to their impact on humans, animals and the environment, prompted me to investigate biological control strategies for protecting almond fields. The objective of this project was to explore the fungus Entoleuca sp. as a new biological control agent against fungi of the Botryosphaeriaceae family.

Methods: Pathogenicity tests were carried out on excised almond shoots to test the aggressivity of five isolates of N. parvum. To evaluate the antagonistic effect of Entoleuca sp. against this pathogenic species, inhibitory assays, involving the growth of Entoleuca sp. on cellophane membranes, were conducted including a collection of 30 Entoleuca sp. and two N. parvum isolates (NpALM2 and F085). In addition, in vitro dual confrontations experiments were carried out in which the percentage of inhibition of the mycelial growth of N. parvum was measured 15 days after the dual confrontation. In this experiment, it was also observed whether the Entoleuca sp. isolates exhibited the capacity to inhibit the growth of N. parvum or if they displayed overgrowth upon them [2].

Results: All N. parvum isolates tested produced necrotic lesions on inoculated excised almond shoots. NpALM2 and F085 isolates were the most virulent. Among the 30 Entoleuca sp. isolates evaluated, six (E302-9, E450-9, E471-14, E472-9, E473-2 and E474-11) were selected for exhibiting the best control of N. parvum by inhibiting their mycelial growth around 50%. All the selected Entoleuca sp. isolates controlled better N. parvum F085 than NpALM2 isolate.

Conclusions: Entoleuca sp. is a potential biological control agent against the fungus N. parvum pathogenic to almond. The mode of action could be to inhibit the growth of the pathogenic fungus or to overgrowth it. Further experiments should be carried out to evaluate the antagonist of the selected Entoleuca sp. isolates in planta.

REFERENCES

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