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S2 P14 Ability of fungi isolated from olive tree cultivars with different susceptibilities to olive knot to inhibit *Pseudomonas savastanoi* pv. *savastanoi*

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The Olive Knot is distributed in olive-growing regions worldwide. This disease is caused by the *Pseudomonas savastanoi* pv. *savastanoi* (Psv), a bacterium that produces galls especially on stems and twigs of olive tree. The use of biological control agents (BCAs) to control plant diseases have gained increasing attention during the last decades, due the negative impact of pesticides on environment and human health. This strategy can offer an alternative in order to achieve a sustainable and environmentally friendly agriculture.

The knowledge of fungal communities inhabiting the phyllosphere of olive tree and the type of interaction that they stablished with the host plant is essential to explore the use of these microorganisms as BCAs against Olive Knot. Previously, we have characterized the fungal communities inhabiting either the surface (epiphytes) or internal tissues of twigs (endophytes) from olive tree cultivars with different susceptibilities to Olive Knot (Cobrançosa moderately tolerant; Verdeal Transmontana susceptible). In this work, 43 endo- and epiphytes of this fungal community were screened for the suppression of Psv, and several mechanisms behind this activity were also studied by evaluating lytic enzymes production. Interspecific interaction was assessed on two different culture media, potato dextrose agar (PDA) and olive leaf twigs extract (OLTE), with agar overlays and by measuring the zone of growth inhibition. Lytic enzymes were evaluated qualitatively.

In general, 95% of the fungal species tested inhibited significantly Psv and above an inhibition index (II) threshold of 1.5, being *Dothiorella iberica*, *Rhinocladiella similis*, *Phoma aloes* and *Quambalaria cyanescens* the species that exhibited the maximum values (II ranging from 31 to 19). The inhibition was observed to be affected by growth medium and correlated with the cultivar from which fungi were isolated. In OLTE was observed higher growth inhibition (up to 1.7 fold) and number of species with II> 5 (up to 1.9 fold), compared to medium without host plant extracts. Similarly, fungal species isolated from the tolerant cultivar Cobrançosa showed higher capacity to inhibit Psv (up to 1.3 fold) when compared to isolates from cv. Verdeal Transmontana. This effect was noticed either for endophytes or epiphytes. The production of lipase, protease, amylase and cellulase by fungi contributed to the antagonistic activity against Psv, whose production was influenced by olive tree extracts. Overall, results revealed that intimate physical interaction between fungal endophyte/epiphyte with Psv in the presence of olive tree extracts leads to the production of fungal secondary metabolite compounds that inhibit the pathogen growth, which were otherwise not produced. The potential of these fungal species as biological control agents should be considered and further evaluated under "in vivo" conditions.

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Palavras-chave: biological control, interspecific interaction, endophytes, epiphytes, phyllosphere