

Antagonistic activity of fungi of *Olea europaea* L. against *Colletotrichum acutatum*

Miguel C. Landum¹, Maria do Rosário Félix^{1,2}, Joana Alho¹, Raquel Garcia³, Maria João Cabrita^{1,2}, Fernando Rei^{1,2}, Carla M. R. Varanda³

(1) ICAAM, Universidade de Évora, Ap. 94, 7006-554 Évora, Portugal

(2) Departamento de Fitotecnia, Universidade de Évora, Ap. 94, 7006-554 Évora, Portugal

(3) IIFA, Universidade de Évora, Ap. 94, 7006-554 Évora, Portugal

(4) Departamento de Zootecnia, Universidade de Évora, Ap. 94, 7006-554 Évora, Portugal

Fungi naturally present in olive trees were isolated, identified and tested for their potential to be used as biological agents against *C. acutatum*, the causal agent of anthracnose, one of the most important olive diseases. Antagonistic activity and effect of their secondary metabolites was evaluated through dual culture growth, agar-diffusion and volatile tests. A total of 14 isolates were identified from olive leaves, 12 belonged to genera *Alternaria*, *Epicoccum*, *Fusarium*, *Aspergillus*, *Anthidium*, *Chaetomium*, *Diaporthe*, *Nigrospora*, 1 to family *Xylariaceae* and 1 was unclassified. The most frequent isolates, composing half of the isolates identified, belonged to genera *Alternaria*, *Fusarium* or to species *Epicoccum nigrum*.

All fungal isolates, when grown in dual culture, showed some inhibitory action over the growth of *C. acutatum*. Maximum inhibition was observed with *A. niger* (86.3%), *N. oryzae* (66.7%) and the unclassified endophyte (68.6%). Volatiles tests showed that all fungal isolates produced volatiles that caused similar inhibition rates of *C. acutatum* growth.

Significant differences on *C. acutatum* growth inhibition were obtained when agar diffusible tests were performed, where only 5 fungal isolates caused *C. acutatum* growth inhibition: *Alternaria* sp. isolate 2 (26.8%), the fungus from *Xylariaceae* family (14.3%), *Alternaria* sp. isolate 1 (10.7%); *Diaporthe* sp. (10.7%), *Nigrospora oryzae* (3.5%). Volatile substances produced by these different isolates were identified through gas chromatography techniques, as phenylethyl alcohol, 4-methylquinazoline, benzothiazole, benzyl alcohol, linal, galaxolide, among others. These inhibitory volatiles could play a significant role in reduction of *C. acutatum* expansion in olive and their study as potential biocontrol agents should be further explored. This would be of great interest to meet one of the main concerns of public health that is the excess of chemical fungicides on crop plants.