

In vitro* antifungal activity of *Foeniculum vulgare* Mill. essential oil over grapevine fungal pathogen *Phomopsis viticola

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Fungal diseases pose an obstacle to the increase of quality and production in humid wine-growing regions grapevine culture. Therefore, the need for alternative approaches to disease control emerges, aiming to diminish the development of resistant pathogen strains and to increment food safety. To this end, the use of fungicidal essential oils (EO) constitutes an interesting strategy regarding management of plant pathogens. Grapevine fungal pathogen *Phomopsis viticola* weakens vines, reduces quality of grapes and may contribute to several secondary rots. Symptoms first appear as elongated lesions near the base of shoots, but can also be presented on leaves, mainly on the lower leaves of the shoot. Production losses due to *P. viticola* infection can range from 10 to 40% (1). In light of this, the present study aims to evaluate the effect of *F. vulgare* EO on *P. viticola* mycelial growth. The strain employed in this work was isolated from grapevines and the EO was obtained by hydrodistillation (1 h) (2) and later analysed by GC/MS. EO was emulsified with Tween 20 (1:1) and added to autoclaved PDA medium (potato-dextrose-agar) (40° C) at 0.0, 0.025, 0.05, 0.10, 0.15 and 0.20 µL/mL. Emulsion were then poured onto Petri dishes and inoculated with mycelium discs (ø 5 mm) from 7th day culture of *P. viticola*. Dishes were kept at 25° C and 12 h photoperiod for 14 days. Mycelial growth diameter was measured on the 3rd, 5th, 7th, 10th and 14th days of culture. GC/MS analysis of EO indicated the presence of 13 compounds, of which the major component (62.05%) is *trans*-anethol, a well-known antifungal compound (3). There was a significant difference in relation to the control from the concentration 0.05 µL/mL. At the concentration 0.15 µL/mL, the OE treatment presented fungicidal action, which was evidenced by the transfer of mycelial plates from non-growth plates to OE-free plates, in which growth was not observed. Such results point to the potential use of *F. vulgare* OE in the alternative control of leaf spot.

1. Naves et al. Circular Técnica Embrapa Uva e Vinho, 2006, 69.
2. Agostini et al. **Braz Arch Biol Techn**, 2009, 52(2):473-478.
3. Huang, Y. et al. **Molecules**, 2010, 15:7558-7569.

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