

Title Effect of some essential oils on mycelial growth of *Penicillium digitatum* Sacc.
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Abstract

The antifungal action of four essential oils of *Foeniculum vulgare* (fennel), *Thymus vulgaris* (thyme), *Eugenia caryophyllata* (Clove) and *Salvia officinalis* (sage) was tested in vitro against *Penicillium digitatum* Sacc. Direct contact and vapour phase were used to test the antifungal activity of these essential oils against *P. digitatum* that is responsible for green mould rot of citrus fruits. The vapour phase and direct contact of clove and thyme essential oils exhibited the strongest toxicity and totally inhibited the mycelial growth of the test fungus. Thyme and clove essential oils completely inhibited *P. digitatum* growth either when added into the medium $600 \mu\text{l l}^{-1}$ or by their volatiles with $24 \mu\text{l}$ per 8 cm diameter Petri dish. In in vitro mycelial growth assay showed fungistatic and fungicidal activity by clove and thyme essential oils. Sage and fennel oils did not show any inhibitory activity on this fungus. Scanning electron microscopy (SEM) was done to study the mode of action of clove oil in *P. digitatum* and it was observed that treatment with the oil leads to large alterations in hyphal morphology.

<http://www.springerlink.com/content/08666705pgj34135/fulltext.pdf>