

Chemical Characterization of Lavandula dentata Essential Oil Cultivated in Chile and Its Antibiofilm Effect against Candida albicans

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Abstract

Candida albicans is the most common human fungal pathogen, and with the increase in resistance rates worldwide, it is necessary to search for new pharmacological alternatives. *Lavandula dentata* L. essential oil is recognized as having antimicrobial properties. However, its effect against fungal biofilms has been poorly described. *C. albicans* -related infections involve the development of biofilms, which are highly resistant to conventional antifungals. In this work, we evaluated the antibiofilm effect of *L. dentata* L. essential oil against *C. albicans*. First, we characterized the essential oil by gas chromatography-mass spectrometry. The antifungal effect on *C. albicans* reference strains was evaluated by a disk diffusion assay and the minimal inhibitory concentration was obtained through a microdilution assay. The effect of the essential oil on the adhesion ability of *C. albicans* was determined through a crystal violet assay, and morphogenesis inhibition was assessed by light microscopy. The effect of the essential oil on the microarchitecture of biofilms was evaluated through scanning electron microscopy. Finally, the antibiofilm effect was evaluated through an adapted biofilm scratch assay and XTT viability assay. The main constituent of the essential oil was the monoterpenoid eucalyptol (60%). The essential oil presented minimal inhibitory concentrations of 156 and 130 $\mu\text{g/mL}$ against two strains assayed. This minimal inhibitory concentration inhibited adhesion, morphogenesis, biofilm formation, altered microarchitecture, and decreased the viability of established biofilms formed on abiotic surfaces for both strains assayed. This study demonstrates that the essential oil from *L. dentata* could be a promising treatment against *C. albicans* biofilms.

Palabras clave

Palabras clave de autor:[Lavandula dentate](#); [Lamiaceae](#); [essential oil](#); [antifungal](#); [antibiofilm](#); [Candida albicans](#)

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