

TITLE: INHIBITION OF HYPHAE FORMATION AND ANTIFUNGAL ACTIVITY IN *Candida* spp. BY *Mentha* spp. ESSENTIAL OIL

Authors: Busato de Feiria, S.N.¹ ; Mariano, P.L.S.¹ ; Boni, G.C.¹ ; Anibal, P.C.¹ ; Foglio, M.A.² ; Höfling, J.F.¹

Institution: ¹FOP UNICAMP (Av. Limeira, 901, Areião, Piracicaba/SP); ²FCF UNICAMP (Rua Alexandre Cazellatto, 999, Vila Betel, Paulínia/SP).

Abstract

Studies with essential oil of *Mentha* species related from the literature have shown a potential antimicrobial activity against *Candida* species. The meaning of such study was to evaluate in vitro, the activity of the essential oil of *Mentha* spp. against *Candida* spp. extracted seasonally from samples collected over a year, and to test the effect by these plants on the hyphae formation by *C. albicans* (CBS 562) after exposure to oil. Leaves of *Mentha* spp. (*M. aquatica*, *M. arvensis* and *M. piperita*) were harvest monthly for a year, and its essential oil extracted through hydrodistillation method (cleverger). The oils were analyzed according to their yield and composition by gas chromatography (GC-EMS) and tested against *Candida* species (*C. albicans*, *C. parapsilosis*, *C. dubliniensis*, *C. guilliermondii*, *C. krusei*, *C. rugosa*, *C. tropicalis* and *C. glabrata*) for determining the minimum inhibitory concentration (MIC) by the serial microdilution method at antifungal susceptibility (CLSI, 2008). The oils were test on the hyphae formation, in which the yeast was incubate in the presence of 10% FBS and 2mg/ml of essential oils for 16h in 10% CO₂. The amount of hyphae was estimate by reading on microplate spectrophotometer. Essential oils of *Mentha* spp. collected from april to september showed inhibition of planktonic cell growing of *Candida* spp. at a concentration of 2mg/ml. The hyphae formation inhibition activity for *C. albicans* (CBS562) was up to 38%. No inhibition was found by *C. glabrata* and *C. tropicalis* species. The detection of the essential oil components of *Mentha* spp. proved to be dependent on seasonal weather conditions. The more favorable conditions for obtaining the antifungal activity of the *Mentha* spp. oils against *Candida* yeasts were associated with temperature media of 19°C, where the greater production of compounds such as dihydrocarveol, dihydrocarvone and carvotanacetone (*M. aquatica*); menthol and isomers (*M. arvensis*); menthofuran and menthyl acetate (*M. piperita*) was found. The results obtained in this research show that weather conditions may influence the composition and performance of *Mentha* spp. essential oils and also the antifungal activity of the plant. The reduction in hyphal formation by *C. albicans* in the presence of *Mentha* spp. essential oil also shows that these plant components may be a potential inhibitor factor by hyphae formation on the *Candida albicans* yeasts.

Key words: *Candida* spp., *Mentha* spp., essential oil.