

## Evaluation of antifungal activity of essential oil of Carvacrol on standard Fluconazole sensitive and resistance strains of *Candida albicans*

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### Abstract

**Background and objectives:** *Candida albicans* is a human opportunistic fungus causing mucosal and systemic infections in immunocompromised individuals. There is evidence of increasing resistance to antifungal agents, thus it is necessary to search about new formulations for finding the antifungal agents. Some plants have antimicrobial properties due to presence of components such as polyphenols. We aimed at evaluating antifungal effects of Carvacrol essence, which is the main compound of essential oil of *Thymus vulgaris*, on standard Fluconazole sensitive and resistance strains of *Candida albicans*.

**Material and Methods:** This study evaluated the antiCandida activity of essential oil Carvacrol by means of Inhibitory zone diameter and Minimum Inhibitory Concentration (MIC), using Microdilution broth and Disc diffusion methods. To do this, Serial dilutions (10-100  $\mu$ l) of essential oils were made in 96 well microtiter plates. The wells' opacity was assessed by using a microtiter plate reader of solution. The Minimum Inhibitory Concentration (MIC) of essential oil Carvacrol and Fluconazole were measured by counting the number of colony in Dextro agar medium.

**Results:** the minimum inhibitory concentration of Carvacrol essence in standard strains and Fluconazole-resistance *Candida albicans* are, respectively, 5.3 and 6.18 $\mu$ g/ml, and the Minimal Fungicide Concentration (MFC) are 10.61 and 12.3 $\mu$ g/ml. Inhibitory zone diameters are 45 and 35 millimeter for Fluconazole sensitive and resistance *Candida albicans*, respectively.

**Conclusion:** the results show that essence of Carvacrol has suitable antifungal effects against standard strains and Fluconazole sensitive and resistance of *Candida albicans*. These herbal essences, after supplementary studies, possibly can be used for infections caused by *Candidas*.

**Key words:** Antifungal activity; Carvacrol; *Candida albicans*; Fluconazole