

## Antifungal activity against *Candida* sp detection via synergism between tannin and the ethyl acetate fraction root of *Cochlospermum regium*

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### Summary

The incidence of invasive fungal infections is due in large part to the significant increase of the population of immunocompromised patients. The species of the genus *Candida* are highlighted among the fungi responsible for diseases in immunocompromised individuals. Various antifungal agents used in the treatment of candidiasis have shown decreased response to treatment and high toxicity. Thus, the use of antifungal agents from natural sources can be an alternative to combat these infections. In this context, the objective of this research was to investigate the existence of synergism between tannin and the ethyl acetate fraction (EtOAc) in the species *Cochlospermum regium* and the minimum fungicidal concentration (MFC) against the yeast *Candida albicans* (ATCC 10231), *Candida albicans* (1252), *Candida glabrata* (ATCC 13813), *Candida krusei* (ATCC 34135) and *Candida tropicalis* (ATCC 28707). To achieve this goal, antifungal activity was performed by determining the minimum inhibitory concentration (MIC) by the broth microdilution technique as provided by the CLSI (2003) with modifications. From these results, the checkerboard method was done to determine the fractional inhibitory concentration (CIFI), which allows to evaluate the type of interaction between EtOAc fraction and the tannin against candidas. The interaction was defined as synergistic when the CIFI $\leq$ 0.5, additive between 0.5 and 1.0, indifferent between 1.0 and 4.0, and antagonistic with CIFI $>$  4.0. Based on this methodology, it observed an association between EtOAc fraction and the tannin combined MIC showed ranging from 23.42 to 39.05  $\mu\text{g.mL}^{-1}$ . The CIFI values indicated a synergistic interactions against *C. krusei*, *C. glabrata*, *C. albicans* (ATCC 10231) and *C. albicans* (1252) strains with CIFI 0.13; 0.13; 0.46 and 0.31, respectively. An additive interaction was found in *C. tropicalis* with a CIFI 0.75. A 500 $\mu\text{g.mL}^{-1}$  fungicidal effect was detected against *C. glabrata*. These results showed fungal growth inhibition upper when compared with the test performed with AcOEt fraction and the tannin alone. Together, these data suggest that the association of tannin and a some substance present in the EtOAc fraction, found in *C. regium* presents a potential activity against the analyzed yeast, indicating thus the possibility of pharmacological use of plant compounds for the treatment of fungal infections.

**Key - words:** *Cochlospermum regium*, antifungal activity, synergism, AcOEt fraction and tannin.

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