

TITLE: Antifungal activity of extracts *Chamaecostus cuspidatus* against strain of *Candida albicans* and *Trichophyton rubrum*

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ABSTRACT:

Fungal infections have increased worldwide, and the species *Trichophyton rubrum* and *Candida albicans* are among the major etiological agents. The limited number of antifungal agents available, associated to their toxicity and the increase of resistant strain to these drugs make the search for new antifungal compounds an urgent one. Once plants are considered promising sources for new antifungal agents, we evaluated the ethanol extracts of activity sheets, rhizomes and stems of *Chamaecostus cuspidatus* against *Trichophyton rubrum* (ATCC MYA 4438) and *Candida albicans* (ATCC 40175), by determining their minimum inhibitory concentration (MIC) and minimum fungicidal concentration (MFC) by microdilution broth method. The extract from the leaves had no antifungal effect (MIC > 1000 µg/ml) and that from the stem showed weak activity (MIC 31,2 and 250 µg/ml against *T. rubrum* and *Candida albicans*, respectively). In contrast, the rhizome extract showed strong activity for both *T. rubrum* (MIC and MFC = 1,9 µg/ml) and for *C. albicans* (MIC and MFC 3,9 µg/ml). Therefore, this extract was subjected to liquid-liquid partition with increasingly polar solvents to generate the soluble fraction hexane, chloroform, dichloromethane, ethyl acetate and water. Aside from the aqueous fraction, all other showed strong antifungal activity (MIC and MFC ranging from 3,9 to 250 µg/ml), and *T. rubrum* more sensitive than *C. albicans*. The extract of rhizomes and their fractions were further evaluated for cytotoxicity in human cell lines (MRC-5), determining the inhibitory concentration for 50% of the cells (IC₅₀). IC₅₀ values obtained were greater than 16 µg/ml, which allowed the classification of plant products as non cytotoxic. Finally, the *C. cuspidatus* products had high IS for *T. rubrum* (ranging from 3,87 to 40,84) and values below ten for *C. albicans* (ranging from 0,24 to 10,19). Therefore, it can be concluded that *C. cuspidatus* has the potential to be used in the development of new compounds targeted to treat fungal infections.

Keywords: Antifungal activity, Cytotoxicity, *Chamaecostus cuspidatus*.

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