Antifungal activity of extracts *Chamaecostus subsessilis*

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Summary:

The incidence of fungal infections has increased worldwide. There are currently a limited number of antifungal agents available and they often exhibit high toxicity and limited efficacy, since resistance to antifungal agents has been reported in various species. Thus, the discovery of new antifungal compounds is urgently needed. Once plants are considered promising sources for new antifungal agents, we evaluated the ethanol extracts of activity sheets, rhizomes and stems of *Chamaecostus subsessilis* 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 0,49 to 15,62 µg/ml), and *T. rubrum* more sensitive than *C. albicans*. Clinical specimens of *T. rubrum* and *C. albicans* were also tested and presented the same sensitivity profile to plant fractions that their reference lines. 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, they determined the selectivity index (SI) and the data revealed that with the exception of the aqueous fraction, the *C. subsessilis* products had high IS for *T. rubrum* (ranging from 11.36 to 68.53) and values below ten for *C. albicans* (ranging from 2,76 to 9.01). Therefore, it can be concluded that *C. subsessilis* has the potential to be used in the development of new compounds targeted to treat human fungal infections, especially those caused by *Trichophyton rubrum.*

Keywords: Antifungal activity. Cytotoxicity. Medicinal plants. *Chamaecostus subsessilis. Trichophyton rubrum. Candida albicans.*

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