

TITLE: ANTIFUNGAL ACTIVITY OF ESSENTIAL OILS OF PLANTS AGAINST DERMATOPHYTOSIS AGENTS

AUTHORS: CARMO, P. H. F.; BASTOS, R. W.; CARNEIRO, H. C. S.; COSTA, M. C.; BALTAZAR, L. M.; SANTOS, D. A.; RESENDE-STOIANOFF, M. A.

INSTITUTION: UNIVERSIDADE FEDERAL DE MINAS GERAIS (AVENIDA PRESIDENTE ANTÔNIO CARLOS, 6627, PAMPULHA, CEP 31270-901, BELO HORIZONTE - MG, BRASIL)

Dermatophytosis are included as the most common man and animals fungal infections. *Trichophyton interdigitale* is one of the main dermatophytosis agents in the world. Although there are antifungal drugs available for the treatment of dermatophytoses, problems related to toxicity and resistance development are common. The search for new compounds that seek alternatives for the treatment of infectious diseases is important. Among the potential targets for prospecting novel antifungal compounds are plants and their derivatives that are extensively applied in folk medicine and constitute an important source of biologically active products. The antifungal potential of three essential oils derived from different plants (OE1, OE2, OE3) was tested using a Minimum Inhibitory Concentration (MIC), according CLSI technique, against *T. interdigitale* in monotherapy and in combination with itraconazole. In addition, the potential of the extracts was tested for the ability to modulate the fungicidal activity of bone marrow derived macrophages, quantifying the production of reactive oxygen and nitrogen species, rate of phagocytosis and analysis of the intracellular proliferation profile. The cytotoxic activity of these compounds in macrophages viability was also tested at different concentrations. The MIC range for the three compounds tested was 0.06-0.01% (% v/v) for OE1, 0.5-0.03% (% v/v) for OE2 and 1-0.12% (% v/v) for OE3. MIC values were lower when compared to itraconazole (0.5-0.12 µg / mL), the drug of choice for the treatment of mycoses. In combination with itraconazole, the essential oils exhibit predominantly indifferent activity and, in some cases, concentration-dependent synergism. In addition, the compounds tested significantly induce the production of reactive oxygen and nitrogen species, as well as increase phagocytic activity by up to 20%. The intracellular proliferation profile, however, showed no dependence on the action of the essential oils. The in vitro results demonstrated that the essential oils tested have a promising potential because they present a low MIC range, induce the action of macrophages and the production of reactive oxygen and nitrogen species, which allows the continuity of the tests in an *in vivo* approach.

Keywords: Dermatophytosis. Essential oil. Antifungal therapy. *Trichophyton interdigitale*.

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