Antifungal activity of dry extracts of national plants against fungi causing onychomycosis

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Onychomycosis is a fungal infection that affects the nail tissue and the dermatophytes are main agent. The high cost of drug treatment, associated with adverse reactions, prolonged therapy and reduced adherence are responsible for relapses and the prevalence of resistant fungal strains. Given the above, it is important to search for treatment options and medicinal plants are sources of compounds with pharmacological properties, which can be effective and less toxic. Thus, this study aimed to evaluate the antifungal potential of plant dry extracts of the national flora Hura crepitans, Licania macrophylla, Caesalpinia ferrea and Bauhinia guianensis. The assays were performed according to the protocol M38-A2 of the Clinical and Laboratory Standards Institute, to establish the minimal inhibitory concentrations (MIC) and minimum fungicide (MFC) of the extracts between 31.25 and 1,000 µg mL⁻¹ and the reference drug (ketoconazole) between 0.25 and 640 µg mL⁻¹ against the Trichophyton mentagrophytes ATCC 11481, Trichophyton rubrum CCT 5507 URM 1666, Epidermophyton floccosum CCF-IOF-3757 and clinical strain of Trichophyton mentagrophytes. There was no antifungal activity of the extracts against the T. rubrum and E. floccosum. Ketoconazole exhibited MIC and MFC values, respectively, 1 µg mL⁻¹ and 4 µg mL⁻¹ against the T. mentagrophytes ATCC 1148 and exceeding 640 µg mL⁻¹ for E. floccosum. The extracts of H. crepitans, C. ferrea and B. guianensis inhibited T. mentagrophytes ATCC 1148 in concentrations of 62.50 µg mL⁻¹; 125 µg mL⁻¹ and 62.50 µg mL⁻¹ and caused the death of the same fungus to 62.50 µg mL⁻¹; 500 µg mL⁻¹ and 62.50 µg mL⁻¹, respectively. For L. macrophylla extract, the MIC value was less than 31.25 µg mL⁻¹ as MIC and MFC were 0.25 µg mL⁻¹ to ketoconazole against the same species. For the clinical strain of T. mentagrophytes, the H. crepitans and L. macrophylla extracts were not active in the experimental conditions. Already C. ferrea extract exhibited MIC of 125 µg mL⁻¹ and MFC of 125 µg mL⁻¹ and B. guianensis extract was characterized as fungistatic 500 µg mL⁻¹. For the reference drug, these values were 0.50 µg mL⁻¹. So, the dry extracts of H. crepitans, C. ferrea, B. guianensis and L. macrophylla were active against T. mentagrophytes ATCC 11481. In addition, C. ferrea and B. guianensis extracts were also active against clinical strain of T. mentagrophytes. Thus, these extracts may be a possible option for the treatment of onychomycosis.

Keywords: Onychomycosis, dermatophytes, biodiversity, antifungal agents

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