Screening of Traditionally Used Tanzanian Medicinal Plants for Antifungal Activity

Author(s)
Daniel P. Kisangau, Ken M. Hosea, Herbert V. M. Lyaruu, Cosam C. Joseph, Zakaria H. Mbwambo, Pax J. Masimba,Catherine B. Gwandu, Lenta N. Bruno, Krishna P. Devkota &Norbert Sewald

Abstract
Fungal infections represent a significant cause of morbidity and mortality especially in immunocompromised patients in the world today. Dichloromethane (DM) and aqueous (W) extracts of nine plants used traditionally for the treatment of fungal infections in Bukoba rural district in Tanzania were screened for antifungal activity against *Candida albicans*, *Cryptococcus neoformans*, and *Aspergillus niger* using agar well and disk diffusion methods. Dichloromethane extracts of *Capparis erythrocarpos* [CE] Isert (Capparaceae),*Cussonia arborea* [CA] Hochst. Ex A. Rich (Araliaceae), *Dracaena steudneri* [DS] Engl. (Dracaenaceae), *Lannea schimperi* [LS] (A. Rich) Engl. (Anacardiaceae), *Rauvolfia vomitoria*[RV] Afz (Apocynaceae), and *Sapium ellipticum* [SE] (Krauss) Pax (Euphorbiaceae) showed activity against all three fungi. Extracts of *Rumex usambarensis* [RU] (Dammer) Dammer (Polygonaceae) and *Zehneria scabra* [ZS] (L.f.) Sond. (Cucurbitaceae) had an activity limited to only one or two of the test organisms. *Rhoicissus tridentata* [RT] (L.f.) Wild & Drum (Vitaceae) was the only plant without activity. Fractions of the active extracts CE, CA, DS, LS, and SE exhibited higher antifungal activity against one or more of the three fungi. Four compounds isolated from *S. ellipticum* also exhibited antifungal activity against one or more of the three fungi. The minimum inhibitory concentrations (MICs) and minimum fungicidal concentrations (MFCs), determined using the microplate assay method, ranged between 0.4 and 50.0 μg/mL for crude extracts, 1.6 and 50.0 μg/mL for semi-purified fractions, and 0.12 and 1.0 μg/mL for pure compounds, as compared to 0.016–1.5 μg/mL for fluconazole. We confirm the potential of traditionally used plants as a source of new drugs for treatment of fungal infections.

Keywords:
Antifungal activity,
In vitro evaluation,
Traditional medicines