Antifungal properties of crude extracts of five egyptian medicinal plants against dermatophytes and emerging fungi.

Hashem M.

Abstract:

Antifungal properties of the crude extracts of five medicinal plants (Artemisia judaica, Ballota undulate, Cleome amblyocarpa, Peganum harmala, and Teucrium polium) were tested against dermatophytes and emerging fungi. Ethanol extract of Ballota undulate was the most effective against all tested fungi. Paecilomyces lilacinus, P. variotii, and Candida albicans were the most sensitive organisms. The minimum inhibitory concentration (MIC) of Ballota undulate ethanol extract against C. albicans, P. lilacinus, and P. variotii was 25 mg/ml. GC-MS analysis revealed that Ballota undulate ethanol extract contains 35 aliphatic and aromatic hydrocarbons, sesquiterpene hydrocarbon along with some other essential oils, which could be involved in antifungal activity. Light microscopy and scanning electron microscopy (SEM) have proved that Ballota undulate ethanol extract exhibits fungicidal effect on P. lilacinus through alterations in hyphal structures including budding of hyphal tip, anomalous structure, such as swelling, decrease in cytoplasmic content, with clear separation of cytoplasm from cell wall in hyphae. SEM clearly showed distorted mycelium, squashed and flattened conidiophores bearing damaged metullae. Eventually, the mycelia became papillated, flattened, and empty. Puncturing and squashing of hyphae as well as complete cell wall disruption were clear signs of complete death of hyphae.

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