

Antifungal Activity of Plant Extracts Against Dandruff Causing Yeasts

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Yeasts in the genus of *Malassezia* cause dandruff and other linked skin diseases. Currently available treatment options for management of dandruff are of synthetic origin, with certain limitations and also are unable to prevent re-occurrence. Research also indicates that the commercially available anti-dandruff products differ in their effectiveness. The objective of the current study was to isolate and characterize fungal species that cause dandruff, and to find out satisfactory combination of plant extracts to control dandruff in effective Minimal Inhibition Concentrations (MIC) to be used in cosmetics. Dandruff flakes were collected and cleared for the confirmation of fungal dandruff using a flow chart in Karhoo *et al* and yeast isolates were identified on the basis of biochemical tests. Antifungal effect of herbal extracts were screened as potential sources of anti-dandruff herbals by measuring the MIC values. The most suitable combination of plant extracts were developed based on LD₅₀ (Lethal Dose) and effective exposure time. Antimicrobial agents of extracts were separated and checked by bioautography using *Malassezia* spp. *Malassezia furfur*, *Malassezia obtusa* and *Malassezia pachydermatis* were the identified dandruff causing yeasts. The MIC values of *Terminalia chebula*, *Terminalia bellirica* and *Phyllanthus emblica* was 0.15g/ml, while *Hibiscus rosa* was 0.1g/ml and *Allium sativum* was 0.05g/ml with respect to 0.02g/ml of Miconazole. The negative control was water. The well method diffusion was better (Mean values; Well = 0.91 cm > Disk = 0.70 cm). The oil diffusion was higher with Peg40 Hydrogenated Castor oil ($p \leq 0.05$). Clove, peppermint, Rosemary and Thyme had the highest antifungal effect out of the essential oils tested.

Keywords: *Malassezia* spp., lethal dose, MIC, antifungal, scalp microbiome