

**INVESTIGATION OF CHEMICAL AND
ANTIFUNGAL PROPERTIES OF
TRADITIONALLY USED MEDICINAL PLANTS
FOR SKIN DISEASES IN SRI LANKA**

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By

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ABSTRACT

The antifungal and antioxidant properties of various extracts of plants are of great interest in food and beverage, cosmetic and pharmaceutical industries. Present study was carried out to investigate antioxidant and antifungal properties. Extracts from different parts of six medicinal plants; *Delinia retusa*, *Elaeocarpus serratus*, *Cassia alata*, *Alpinia malaccensis*, *Indigofera tinctoria* and *Alstonia scholaris* were selected. According to the literature, there is no proper scientific evidence to prove the traditional usage of above plant for skin diseases in Sri Lanka. Therefore, the main objective of the study is to evaluate antifungal and antioxidant properties of above medicinal plants and to investigate active fractions coming from activity directed fractionation.

Antifungal activity was tested for five dermatophytes *T. mentagrophytes*, *T. rubrum*, *E. floccosum*, *M. canis* and *M. gypseum* where the *P. variotti* ATCC 22319 was used as quality control organism. The agar well diffusion assay was used and the antifungal activity was evaluated by measuring the inhibition zone diameter (Medical Research Institute, Colombo). DPPH scavenging assay was used to determine the antioxidant properties.

Fruit extract of *D. retusa* was active against all the dermatophytes used in the study and the highest inhibition zone observed (14 mm) for *M. gypseum*. Flower extract of *D. retusa* appeared to be positive results against all the dermatophytes except *P. variotti* and showed highest inhibition zone for *M. canis* (15 mm). For DPPH assay, IC₅₀ value of *D. retusa* flower, leaf and fruit showed $17.75 \pm 0.70 \mu\text{gml}^{-1}$, $24.5 \pm 0.77 \mu\text{gml}^{-1}$ and $37.00 \pm 3.71 \mu\text{gml}^{-1}$. Since, *D. retusa* is endemic to Sri Lanka as well as not being studied was selected for further studies. Ethyl acetate and n-butanol fractions were active against all dermatophytes used in the study except *P. variotti*. Ethyl acetate fraction appeared highest inhibition zone diameter (14 mm) for *M. gypseum* where as the n-butanol fraction obtained 14 mm for *T. mentagrophytes*. The ethyl acetate fraction ($6.60 \pm 0.30 \mu\text{gml}^{-1}$) was appeared to contain most active antioxidant substances followed by the n-butanol fraction ($14.50 \pm 0.95 \mu\text{gml}^{-1}$).

In conclusion, to author's knowledge present study can be considered as the only systematic report of initial screening of active extracts in order to isolate antifungal principles through activity directed separations.