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Evaluation of total phenolic content, total flavonoid content and in vitro sun screening activity of *Tephrosia purpurea* (Kathurupila) leaves grown in Sri Lanka

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Background: Application of sunscreen on the body is highly recommended as one of the best ways to minimize the harmful effects of over exposure to sunlight. Nowadays, there is a high demand for efficient plant based natural and herbal sunscreens due to lack of side effects which are reported to be present in the commercial synthetic sunscreen products. *Tephrosia purpurea* leaves is known to contain a high level of flavanods which are natural photoprotectants for plants.

Objectives: To determine total phenolic content (TPC), total flavonoid content (TFC) and in vitro sunscreening activity of leaf extract of *Tephrosia purpurea* leaves.

Methodology: Aqueous methanol (80%) defatted crude extract of *T. purpurea* leaves was prepared by steeping method and was subjected to preliminary phytochemical tests. The TPC, and TFC were determined by using Folin Ciocalteu and aluminium chloride methods respectively. Sun protective factor (SPF) value was calculated by using the Mansur equation according to the UV absorbance of the extract in methanol obtained in the range of 290-320 nm.

Results: The phytochemical screening revealed the presence of phenolics, flavonoids, carbohydrates and absence of alkaloids in the extract. The TPC and TFC of the extract were 1725.858±35.985 mg Gallic acid equivalent (GAE)/100 g and 262.934±36.241 mg Catechin equivalents (CAE)/100 g dry weight (DW) of the leaves. The plant extract and the reference Dermatone® in methanol have shown concentration dependent sun protective activity. The extract has a promising sunscreening ability (SPF=40) compared to the reference Dermatone (SPF=35) at the concentration of 1 mg/mL.

Conclusions: *T. purpurea* leaves are rich with phenolic and flavanoid compounds and have promising sunscreening activity and it could be used to formulate herbal sunscreen products.

Keywords: *T. purpurea, sunscreening activity, Flavonoids, Phenolics*