
Evaluation of Photoprotective Potential in Sunscreen Formulations Prepared from Methanolic Extract of *Mollugo cerviana* (L.) Ser.

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Sunscreens are capable of reducing solar ultra violet (UV) radiation-mediated detrimental conditions such as erythema, wrinkling and photocarcinogenesis. Synthetic sunscreen-related side effects are hindering the commercial success of these products. Several *in vitro* and *in vivo* studies have suggested that these side effects occur due to the synthetic photoprotective molecules. The importance of natural photoprotective molecules is therefore underlined. The present study is aimed at quantifying the photoprotective potential of sunscreen formulations prepared from a methanolic extract of *Mollugo cerviana* (pathpadagum) plant. Firstly, the cytotoxicity of the methanolic extract was determined using MTT assay. Thereafter, three different sunscreens formulations were prepared from the extract by incorporating different concentrations (25%, 50% and 75%) into an aqueous cream base. The initial photoprotective activity of these formulations was evaluated by measuring the UV absorbance and the sun protection factor (SPF) was subsequently calculated. The extract displayed over 90% cell viability in the MTT assay, indicating its suitability to develop into a herbal sunscreen. The SPF values of the prepared formulations revealed that the one with 75% of extract has the highest photoprotective activity of 27.59 ± 0.15 . In addition, 25% and 50% of extract-incorporated formulations displayed SPF values of 15.83 ± 0.22 and 22.91 ± 0.14 respectively. The photostability of all these formulations was confirmed by the insignificant deviation of SPF values during a three-week time span. Moreover, the negative control failed to display any photoprotective activity while the positive control displayed an activity below the proclaimed level.

Keywords: Mollugo cerviana, Photoprotection, Sun protection factor, Ultra violet