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Determination of photoprotective potential in sunscreen formulations with different concentrations of *Olax zeylanica* (Mella) extract

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The ultra-violet (UV) component of the solar radiation can cause various deleterious effects on the human skin. The occurrence of wide range of dermatological diseases are correlated with the excessive exposure to UV radiation, out of which, skin cancers are more lethal than the others. Skin cancer is a result of chronic exposure to the UV radiation, but there are many acute effects such as hyperpigmentation, erythema and weakening of immunological functions. The best method to avoid UV exposure is to abstain from outdoor activities during the daytime, however, this is not always possible and practicable. Thus, the topical application of synthetic sunscreens has been widely adopted as a preventive measure despite the number of adverse effects associated with these products. In this respect, the development of herbal sunscreen products devoid of undesirable harmful effects as alternatives to the synthetic sunscreens would be highly beneficial. Therefore, the present study focuses on the development of herbal sunscreen formulations using different concentrations of aqueous-methanolic extract of Olax zeylanica and the evaluation of photoprotective potency in each formulation. The aqueous-methanol extract was prepared using dried leaves of O. zeylanica. Thereafter, sunscreen formulations were developed by incorporating this extract at different concentrations (ie. 25%, 50% and 75%) to the aqueouscream base. The UV absorbance of each preparation was measured between 260-400 nm and the sun protective factor (SPF) was calculated according to the Mansur equation. Calculation of SPF is an evaluation method of how much photoprotection is given by a sunscreen product and our observations revealed that the formulation with 25% of the extract possesses the lowest SPF. In the other end, the formulation containing 75% of the extract has the highest SPF which gives an indication that when the extract concentration is higher, the protection from UV radiation is also higher. The photostability of this formulation was also evaluated by calculating SPF after exposing it to the direct sunlight for 7, 14 and 21 days. Since there was no significant reduction in the SPF value within the stipulated time period, the formulation exhibited photostability. Based on the preliminary observations, it is possible to hypothesize the presence of UV absorbing organic molecules in the O. zeylanica extract. Therefore, experiments are in progress to identify these secondary metabolites and also to increase the efficacy and bioavailability of the formulation using nanotechnology.

Keywords: Olax zeylanica, photoprotection, photostability, sun protective factor, ultra-violet radiation

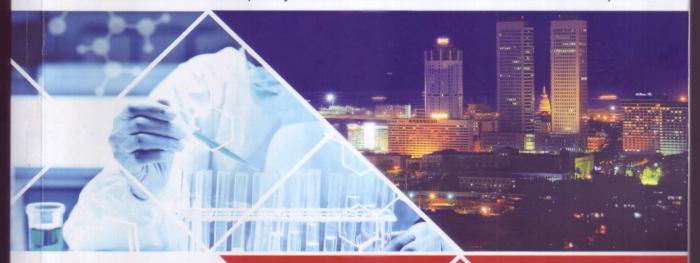
Acknowledgement: This work was supported by National Science Foundation, Sri Lanka under the research grant RG/BS/2017/05





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