

Evaluation of Sunscreen activity and Phototoxic effect of methanolic extract of *Punica Granatum var.pleniflora*

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Abstract

Introduction: Skin is the most important barrier to protect our body, therefore supporting this fundamental organ against to sun rays is very important. Herbal formulations may have less harmful effects. Considering the previous studies carried out on *Punica granatum var.pleniflora* (Golnar-e-Farsi), an approximately unknown Iranian plant, have shown the sunscreen effects, the phototoxicity and cytotoxicity of this plant was evaluated in this research.

Methods and Results: In this study, five different concentrations of methanolic extracts of plant (50, 75, 100, 125, 150 µg/L) were provided. The prepared extracts were determined for SPF and PIF values. Evaluation of cytotoxicity and phototoxicity effects were used by B16 and 3T3 cells with a number of 5000 cells for each skin in a 96-well plate. Positive controls were taxol and chlorpromazine respectively. The results were indicated as Mean ± SEM and were compared using ANOVA with Tukey Post Hoc. To calculate IC50, Probit analysis was used. At the applied concentration, 10 µg/ml, all of the extracts, showed a little cytotoxicity, however calculated PIF did not show any phototoxicity for the extracts. Transmittance values for concentrations 50, 75, 100, 125, 150 µg/L. The wavelength range 292.5-337.5 nm was measured at intervals of 5 nm. For this plant calculated PIF did not show any phototoxicity for the extracts SPF is calculated 9.35 for methanolic extract. The extracts did not have cytotoxic effects and also at the above-mentioned concentration they did not show phototoxicity. Thus, the extracts can be considered as appropriate agent for herbaceous sunscreen products.

Conclusions: The extracts of *Punica Granatum* did not have cytotoxic effects and also at the above-mentioned concentration they did not show phototoxicity. Thus, the extracts can be considered as appropriate candidate for herbaceous sunscreen products, after doing more tests.

Keywords: *Punica granatum var.pleniflora*, Cytotoxicity, Phototoxicity, Sunscreen