PHYTOCHEMICAL ANALYSIS AND OPTIMIZATION OF CACTUS EXTRACTS FORMULATION OF MULTI-PURPOSE FACE CREAM BLENDING WITH BENEFICIAL INGREDIENTS

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ABSTRACT

This research study investigates the phytochemical analysis qualitatively and quantitatively and the optimization of *Opuntia cochenillifera* cactus extracts formulation of multi-purpose face cream. Comprehensive qualitative phytochemical analysis was conducted to identify specific bioactive compounds present in two extraction methods including hot water extraction and maceration. as well as quantitative phytochemical analysis was also conducted to quantify the total antioxidant capacity of both extractions revealing significant antioxidant activity in the extracts. Moreover, % inhibition was determined using two extracted samples.

This research study proceeds with the formulation of a multi-purpose face cream incorporating these cactus extracts and blending them with other beneficial ingredients that solve multiple skin problems present in the face. The formulated face cream undergoes a series of tests to evaluate pH stability, electrical conductivity, spreadability. The results indicated that the formulated cream maintained a skin-friendly pH range and excellent stability under various conditions, had good physical properties, and homogeneity, and had desirable spreadability.

However, due to the limited time constraints in vivo testing requiring ethical approval was not conducted, limiting the scope of the results to laboratory assessments. In this research study findings suggest *Opuntia cochenillifera* species of cactus extracts hold as a more effective ingredient in the advanced skincare industry and provide a solid foundation for future research and development. A future research study should aim to include clinical trials to validate these findings and explore the long-term effectiveness of cactus-based formulations on different skins.

Keywords: Antioxidant capacity, Cactus, % Inhibition, Phytochemicals

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