

# Formulation, Development and in-Vitro evaluation of Citrus Aurantium Dulcis Peel Extract, Aloe Barbadensis Miller, Camellia sinensis and Zingiber Officinale Cream for skin nourishment

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## Abstract

This study aimed to formulate a topical cream utilizing extracts from Citrus Aurantium Dulcis peel, Aloe Barbadensis Miller, Zingiber Officinale, and Camellia sinensis for skin nourishment. The extraction process using ethanol and methanol yielded high extractive values, with methanol showing higher percentage yields. Phytochemical analysis revealed the presence of bioactive compounds such as alkaloids, flavonoids, phenols, saponins, and glycosides in the extracts. The cream formulations exhibited desirable physicochemical properties, including suitable pH, texture, color, and viscosity. In vitro drug release studies demonstrated controlled release of active ingredients over 8 hours. The cream formulations showed significant antioxidant activity, with formulation 3 exhibiting the highest percentage inhibition of the DPPH reagent. Cytotoxicity evaluation using the MTT assay indicated the safety of the formulations on human fibroblast cells, with high cell viability percentages. The mean absorbance values and corresponding percentages of cell viability are as follows: Blank (0.0544, NA), Negative Control (0.12355, 100), Positive Control (0.06665, 53.95), Formulation 1 (0.09045, 73.21), Formulation 2 (0.0927, 75.03), Formulation 3 (0.09505, 76.93). These findings suggest that the formulated creams possess skin-nourishing properties and antioxidant activity, making them promising candidates for skin care applications. Further in vivo studies and clinical trials are warranted to validate the efficacy and safety of these formulations.

**Keywords:** Citrus Aurantium Dulcis Peel Extract, Aloe Barbadensis Miller, Camellia sinensis and Zingiber Officinale, Herbal Cream, skin nourishment

## Introduction

The skin, as the largest organ of the human body, is a critical protective barrier against environmental factors. It constantly battles against various stressors such as ultraviolet (UV)