

## Formulation and Evaluation of Antioxidant Cream Containing Nepalese Medicinal Plants

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**Abstract :** Due to strong tyrosinase inhibition and antioxidant effects, green tea and Licorice are valuable in cosmetics for the skin. However, data on the addition of essential oils to green tea and Licorice in cream formulation to examine antioxidant activities are limited. The purpose of this study was to develop and assess a phytocosmetic cream's antioxidant and tyrosinase inhibitory characteristics using crude aqueous extracts of green tea, Licorice, and loaded with essential oils. To load the best concentration on cream formulations, plant aqueous extracts were designed, evaluated, and correlated in terms of total phenolic content (TPC), total flavonoids content (TFC), and 2, 2-diphenyl-1-picrylhydrazyl (DPPH) scavenging activity. Moreover, *o. tenuiflorum* and *o. basilicum* essential oils were extracted and added to a cream formulation. The spreadability profile, water washability, centrifugation test, and organoleptic characteristics of formulated oil in water cream were all satisfactory. The cream exhibited a non-Newtonian rheological profile and pH range of  $6.353 \pm 0.065$  to  $6.467 \pm 0.050$  over successive 0, 1, 2, and 3 months at normal room temperature. The 50% inhibition concentrations shown by herbal cream were  $13.764 \pm 0.153 \mu\text{g/ml}$ ,  $301.445 \pm 1.709 \mu\text{g/ml}$  and  $8.082 \pm 0.055$  respectively for 2, 2-diphenyl-1-picrylhydrazyl (DPPH) scavenging activity, ferric ( $\text{Fe}^{3+}$ ) reducing antioxidant power (FRAP) and 2, 2'-azinobis-3-ethylbenzothiazoline-6-sulfonic acid (ABTS) radical scavenging activity, and that of standard ascorbic acid were  $6.716 \pm 0.077 \mu\text{g/ml}$ ,  $171.604 \pm 1.551 \mu\text{g/ml}$  and  $5.645 \pm 0.034 \mu\text{g/ml}$  which showed formulated cream had strong antioxidant characteristics. The formulated herbal cream with a 50% tyrosinase inhibition concentration of  $22.254 \pm 0.369 \mu\text{g/ml}$  compared to standard Kojic acid  $12.535 \pm 0.098 \mu\text{g/ml}$  demonstrated a satisfactory tyrosinase inhibition profile for skin whitening property. Herbal cream was reportedly stable in physical and chemical parameters for successive 0, 1, 2, and 3 months at both real and accelerated time study zones, according to obtained stability study results.

**Keywords :** crude extracts, antioxidant, tyrosinase inhibition, green tea polyphenols

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