

# DEVELOPMENT AND CHARACTERIZATION OF A TOPICAL HERBAL CREAM INCORPORATING ORANGE PEEL AND BEET POWDER FOR ANTIMICROBIAL APPLICATIONS

## ABSTRACT

The study reports the development of a herbal cream incorporating beetroot and orange peel powders to evaluate its stability, permeability and antimicrobial potential. Creams were prepared by emulsifying the oil phase (beeswax, cetostearyl alcohol, liquid paraffin, stearic acid, and almond oil) with an aqueous phase containing herbal powder and rosewater. The formulation was assessed for physiochemical properties, spreadability, permeability using Franz diffusion and antimicrobial activity against *Staphylococcus aureus*. Among the formulations, F3 demonstrated optimal stability (pH~6.4), homogeneity and spreadability. Permeability studies showed maximum release at 120 min. Antimicrobial testing revealed a maximum inhibition zone of 23mm at 100 mg mL<sup>-1</sup>, confirming potent activity. The findings suggest that a combined beetroot-orange peel cream offers a natural topical antimicrobial formulation.