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Formulation and Evaluation of Topical Anti-Inflammatory Gel Containing Ginger and Turmeric

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Abstract: *The present study was designed to develop and evaluate a topical anti-inflammatory gel containing standardized extracts of ginger (Zingiber officinale) and turmeric (Curcuma longa). Both medicinal plants are well-documented for their anti-inflammatory, antioxidant, and wound-healing properties, attributed to their rich content of bioactive constituents such as gingerols and curcuminoids. Macroscopical and microscopical characterization of the raw materials confirmed their identity, with distinctive features like lignified parenchyma, stone cells, and calcium oxalate crystals. Physicochemical evaluations, including moisture content, ash values, and extractive values, demonstrated compliance with pharmacopoeial standards, indicating the purity and suitability of the plant materials. Preliminary phytochemical screening revealed the presence of key secondary metabolites such as alkaloids, tannins, terpenoids, and carbohydrates, supporting their therapeutic potential. The gel was prepared using carbopol-934 as a gelling agent, with triethanolamine used to adjust pH, ensuring compatibility with skin physiology. Evaluation of the formulated gel showed desirable organoleptic properties, optimal pH (5.7–6.3), viscosity (1200–1600 cP), and spreadability (6.0–7.0 cm), all indicating ease of application and good patient acceptability. Moisture content was maintained around 8%, contributing to the gel's stability and skin hydration potential. Stability studies over 60 days confirmed the formulation's consistency in appearance, pH, viscosity, and drug content, affirming its robustness. These findings collectively suggest that the herbal gel offers a promising natural therapeutic approach for managing inflammatory skin conditions. Future studies will focus on in vivo anti-inflammatory efficacy and potential dermatological applications.*

Keywords: Topical herbal gel, anti-inflammatory, *Zingiber officinale*, *Curcuma longa*, phytochemical evaluation, formulation stability

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