



FORMULATION AND EVALUATION OF POLYHERBAL VANISHING CREAM

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ABSTRACT :

Herbal cosmetics are increasingly favored over synthetic alternatives due to their safety profile, nutrient richness, and minimal adverse side effects. The primary objective of this study was to formulate and evaluate an oil-in-water (O/W) polyherbal vanishing cream using crude extracts of *Aloe barbadensis* (Aloe vera), *Santalum album* (Sandalwood), *Eugenia caryophyllus* (Clove), and *Prunus amygdalus* (Almond oil). The cream base was developed using stearic acid, potassium hydroxide, sodium carbonate, glycerine, and water. The prepared formulation was evaluated for organoleptic properties, pH, spreadability, viscosity, homogeneity, washability, irritancy, and stability. The formulation exhibited a yellowish-green appearance, a slightly aromatic odor, an optimal skin-friendly pH of 6.4, superior spreadability ($42 \text{ g} \cdot \text{cm/sec}$), and a viscosity of $26,042 \text{ cP}$. Patch tests confirmed no hypersensitivity, erythema, or edema, demonstrating that the cream is safe, stable, non-greasy, and cosmetically acceptable for routine topical use as a protective, anti-aging, and moisturizing agent.

Keywords: Herbal extract, Vanishing cream, *Aloe vera*, Formulation, Evaluation, O/W Emulsion, Skincare.

1. Introduction

Cosmetic preparations utilizing herbal extracts augment beauty and skin health by delivering essential bioactive compounds directly to the cutaneous layer. Skin serves as the body's primary defense system against environmental stressors, with premature aging and phototoxicity occurring largely due to reactive oxygen species generated by ultraviolet exposure. Topical applications rich in natural antioxidants and photochemoprotective agents mitigate these adverse effects.

Vanishing creams are specialized oil-in-water (O/W) emulsion-based topical formulations composed of stearic acid, alkalis, polyols, and water. They derive their name from their ability to spread smoothly onto the skin, leaving a thin, non-sticky, matte film that disappears rapidly upon rubbing. Unlike synthetic creams that may cause contact dermatitis, itching, or skin sensitization, polyherbal formulations combine multiple botanical actives to offer synergistic therapeutic benefits—including anti-aging, antimicrobial, moisturizing, and skin-softening effects—with high safety margins.

2. Materials and Methods

2.1 Materials

The plant material and excipients utilized in the formulation process include:

- **Active Ingredients:** *Aloe barbadensis* leaf gel (4 g), *Santalum album* powder (4 g), *Eugenia caryophyllus* powder (4 g), and *Prunus amygdalus* oil (2 mL).
- **Excipients & Base:** Stearic acid ($17\% \text{ w/w}$), potassium hydroxide ($0.5\% \text{ w/w}$), sodium carbonate ($0.5\% \text{ w/w}$), glycerine ($6\% \text{ v/v}$), rose oil (2 mL), and distilled water (20 mL).

2.2 Preparation of Alcoholic Herbal Extract

Powdered crude drugs (5 g total of *Santalum album*, *Eugenia caryophyllus*, and *Aloe barbadensis*) were macerated in 100 mL of ethanol in a sealed flask for 5 days. The mixture was filtered, concentrated, and reserved for incorporation into the aqueous phase.

2.3 Preparation of Vanishing Cream

The cream was prepared via the emulsification method by maintaining two separate phases at 70°C :

1. **Oil Phase:** Stearic acid (17%), potassium hydroxide (0.5%), and sodium carbonate (0.5%) were mixed and melted in a porcelain dish heated on a water bath at 70°C.
2. **Aqueous Phase:** The alcoholic herbal extract (4.5%), glycerine (6%), and distilled water (20 mL) were combined in a separate dish and heated to 70°C.
3. **Emulsification & Scenting:** The warm aqueous phase was gradually added to the melted oil phase with continuous, vigorous stirring at 70°C to form a homogenous emulsion. The mixture was allowed to cool to room temperature under steady agitation. *Prunus amygdalus* oil (0.5%) and rose oil were incorporated during the cooling phase prior to final collection.

3. Evaluation Parameters

The formulated polyherbal vanishing cream was subjected to standard physical and biological quality control tests:

- **Organoleptic Properties:** Inspected visually and sensory-evaluated for appearance, color, odor, consistency, and texture.
- **pH Measurement:** Calibrated using a digital pH meter; 20 mg of cream dissolved in distilled water showed an optimal skin-compatible pH of 6.4.
- **Spreadability:** Determined by measuring the time required for two glass slides with 500 mg of cream subjected to a 20 g load to slip apart. Spreadability (SS) was calculated using the equation:

$$SS = \frac{m \cdot L}{T}$$

where m is the weight attached to the slide, L is the length moved, and T is the time taken.

- **Type of Emulsion (Dye Test):** A sample was mixed with scarlet red dye and examined under a microscope; red globules suspended in a clear phase confirmed an O/W emulsion.
- **Viscosity:** Measured using a Brookfield Viscometer (DV II+ Pro model, Spindle S-64) at 20 rpm and 25°C.
- **Skin Irritancy & Patch Test:** Applied 1 g of formulation to a 1 cm² area on the dorsal skin of human volunteers and observed for 24 hours for signs of edema, erythema, or irritation.
- **Accelerated Stability Study:** Formulations were monitored for phase separation, liquefaction, and consistency changes under thermal stress.

4. Results and Discussion

The physicochemical evaluation confirmed that the polyherbal vanishing cream possessed smooth texture, excellent washability, and strong cosmetic stability. No phase separation or grittiness was observed.

Table 1: Physicochemical Evaluation of Polyherbal Vanishing Cream

Parameter	Observed Result	Standard/Inference
Appearance	Yellowish green	Visually elegant
Odor	Slightly aromatic	Pleasant, characteristic
pH	6.4	Compatible with normal skin mantle (4.6–6.5)
Spreadability	42 g·cm/sec	Uniform, easily spreadable
Homogeneity	Smooth, consistent	Good structural integrity
Emulsion Type	O/W Type	Water-washable, non-greasy
Patch Test	Non-hypersensitive	Safe for topical application
Type of Smear	Non-greasy	Disappears rapidly upon rubbing

Parameter	Observed Result	Standard/Inference
Emolliency	No residue left	Leaves skin soft and hydrated
Viscosity	$26,042 \text{ cP}$	Optimum consistency
Washability	Easily washable	Removed effortlessly with tap water
Irritancy Test	No redness or edema	Non-irritant
Stability	Stable	Passes accelerated testing without separation

The presence of *Aloe vera* contributes mono-polysaccharides and hydration factors, while *Santalum album* and *Eugenia caryophyllus* provide natural antiseptic, anti-inflammatory, and antioxidant coverage. *Prunus amygdalus* oil acts as a skin-softening emollient rich in vitamins. The pH value of 6.4 ensures compatibility with the stratum corneum without inducing irritation.

5. Conclusion

The formulated polyherbal vanishing cream effectively combines traditional botanical extracts with a stable O/W emulsification base. The product meets pharmaceutical evaluation parameters for spreadability, non-greasiness, viscosity, and safety. Free from adverse toxic effects, this herbal cream serves as a safe cosmetic alternative providing moisturizing, anti-aging, and skin-protective properties.

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