



FORMULATION AND EVALUATION OF *GARDENIA JASMINOIDES* OIL EXTRACT HERBAL LOTION FOR SKIN CARE

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ABSTRACT

The increasing consumer demand for herbal products has sparked interest in natural ingredients and extracts for cosmetic formulations. Many researchers are exploring herbal formulations, leading to the discovery of new herbal ingredients for use in these products. This study formulates and evaluates an herbal lotion that incorporates *Gardenia jasminoides* oil extract, cocoa butter, almond oil, glycerine, vitamin E, and aloe vera gel for their moisturizing, anti-inflammatory, and antioxidant properties. The essential oil extract contains iridoid glycosides (geniposide), flavonoids (rutin), and terpenoids, which are known for their antioxidant, moisturizing, and anti-aging effects. The physical parameters, including pH, homogeneity (assessed visually and by touch), appearance, and spreadability, were determined. The prepared lotion exhibited acceptable consistency, good spreadability, homogeneity, appropriate pH, a non-greasy texture, and no

evidence of phase separation. This herbal lotion offers a natural, effective, and safe alternative for skincare.

KEYWORDS: *Gardenia jasminoides*, Essential oil, Clevenger, Herbal lotion.

INTRODUCTION

Herbal lotions and creams have numerous benefits, including hydration, miniaturization, and calming effects, all without causing harm to delicate skin. Plants have been used for

generations in traditional medicine to cure a variety of skin disorders, and scientific study has begun to validate these claims.^[1] *Gardenia jasminoides*, often known as Cape Jasmine, is a medicinal plant that has great cosmetic benefits. It belongs to the Rubiaceae family and is prized for its fragrant white blossoms and ornamental appeal.^[2] *Gardenia jasminoides* has long been used in Chinese and Ayurvedic medicine for a variety of reasons.^[3] The essential oil derived from its blossoms is aromatic and high in natural ingredients that promote skin health. It improves skin smoothness, prevents dryness, and has a relaxing effect.^[4] The primary goal of this study is to create and test a herbal lotion containing *Gardenia jasminoides* essential oil, with an emphasis on its hydrating, moisturizing, and calming properties. pH, stability, spread ability, absorption, appearance, and a patch test were all used to evaluate the formulation.^[5] These tests serve to confirm the lotion's stability, effectiveness, and safety when applied to human skin.^[6] This study makes no claims about anti-inflammatory or antioxidant activity because it focuses solely on fundamental skin care qualities.^[7]

MATERIALS AND METHOD

Selection, identification and collection of plant material

Fresh *Gardenia jasminoides* flowers were selected based on fragrance and purity. The flowers are rich in bioactive compounds such as flavonoids, iridoids, and essential oils. *Gardenia jasminoides* fresh flowers were collected from Neyveli, between February and March before sunrise.

Authentication of plant material

Gardenia jasminoides fresh flowers were collected from the home garden in Neyveli, Tamil Nadu, India, and collected between February and March before sunrise. Authenticated by Dr. Kumaresan Vadivelu, Assistant Professor of Botany, Kanchimamunivar Government Institute for PG Studies and Research, Puducherry.

Synonyms: *Gardenia florida* L., *Gardenia grandiflora*.

Family: Rubiaceae.^[8]

Geographical source

Bangladesh, Cambodia, Hainan, Japan, Laos, Mainland China, Taiwan, Thailand, Vietnam, and the East Himalaya.^[9]

Extraction of Essential Oil

Gardenia jasminoides flowers were cleaned, coarsely shredded, and placed in a Clevenger apparatus with distilled water for steam distillation. Heating released steam that carried the essential oil, which condensed and separated in the Clevenger tube. The oil, being less dense, floated on water and was collected using a separating funnel. It was then filtered and stored in a dark amber glass bottle to prevent oxidation and maintain quality. On average 3ml essential oil was obtained from 50g of fresh *Gardenia jasminoides* flowers (Fig. 1).

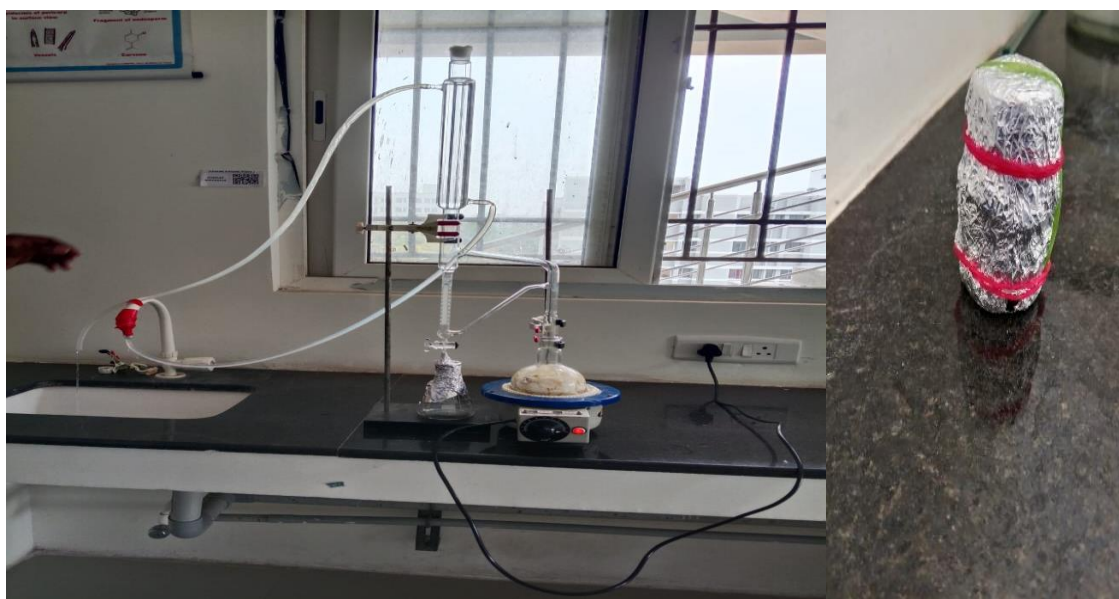


Fig. 1: Extraction of Essential oil.

Preparation of Herbal Lotion

Step 1: Preparation of Water Phase

Take the required quantity of distilled water in a clean beaker. Aloe vera gel and glycerin were blended into the water phase. Use a glass rod to mix properly (Table 2).

Step 2: Preparation of Oil Phase

In a double boiler, melt the cocoa butter gently on low heat. Pour in almond oil after cocoa butter has melted and blend properly (Table 3).

Step 3: Emulsification (blending of an oil phase and a water phase)

Pour the water phase into the oil phase while stirring the entire time in order to create a stable emulsion. Continue stirring until the mixture becomes smooth and consistent.

Step 4: Cooling Phase (40°C)

Pre-cool the lotion to 40° to add the sensitive components without damaging them. After cooling, pour the vitamin E oil and essential oil of *Gardenia jasminoides* into the lotion. Stir well to ensure all the active ingredients are evenly distributed.

Step 5: Packaging and Storage

Add the developed lotion into sterilized jars or bottles. Store in a cool dry area or refrigerate for prolonged shelf life (Fig. 2).



Fig. 2: Prepared Herbal lotion.

Table 1: Formulation of herbal lotion.

S. No	Ingredient	Uses
1.	<i>Gardenia jasminoides</i> essential oil	Soothing the skin
2.	Aloe vera gel	Moisturizer
3.	Almond oil	Moisturizer or Soft the skin
4.	Cocoa butter	Hydrated and soothing the skin
5.	Glycerine	Humectant
6.	Vitamin E capsule	Antioxidant and skin protective
7.	Distilled Water	Diluent

Table 2: Composition of Water Phase.

S. no	Name of the Ingredient	Quality%50ml
1.	Aloe Vera gel	12g
2.	Glycerin	2.5ml
3.	Vitamin E Capsule	1ml
4.	Distilled Water	13ml

Table 3: Composition of Oil Phase.

S. no	Name of the Ingredient	Quality%50ml
1.	<i>Gardenia jasminoides</i> essential oil	10 drops
2.	Almond oil	12 ml
3.	Cocoa butter	9g

Evaluation Test for Herbal Lotion**Organoleptic Character**

The lotion's appearance was evaluated based on its color, smell, texture.^[10]

Irritancy Test

A 1 cm² areas on the left rearward skin was marked and embrocation was applied. The point was observed at regular intervals for 24 hours for any signs of greenishness, swelling, or vexation.^[11]

Sensitivity Test

Lotion was applied to the forearms of six volunteers, and irritation was assessed after 20 minutes.^[12]

Washability Test

A small amount of lotion was applied to the hand and rinsed under running tap water, with the removal time recorded.^[13]

Absorption Test

The lotion was massaged into the skin until it was completely absorbed to assess absorption.^[14]

pH Test

The pH meter was first calibrated and then used to measure the pH of a beaker containing 5g of the sample. The measurement was taken at room temperature using a digital pH meter.^[15]

Smoothness Test

The lotion was rubbed onto the skin to evaluate its smoothness and texture by touch.^[16]

Spread ability Test

A 500 mg lotion sample was placed on the bottom slide, covered with a top slide, and compressed with a 200 g weight. After removing the weight and excess lotion, the bottom

slide was fixed to a machine, and the top slide, attached to a rigid string with a 100 g load, was timed for detachment.^[17,18]

Spreadability (S) was calculated using the formula:

$$S = (M \times L) / T,$$

Where,

S – spreadability,

M - weight on the upper slide,

L - length of the glass slide, and

T -Time

Stability Test

The prepared lotion was kept in a closed container at a temperature of 25-100°C away from the light. Then, phase separation was checked for 30 days.^[19]

Patch Test

Around 1–3 grams of the test material was placed on a piece of fabric or funnel and applied to a 1 cm² area of sensitive skin behind the ears. Control patches from a similar cosmetic brand were also applied. The patch sites were examined after 24 hours for any skin reactions. As no reactions were observed after the initial test, the procedure was repeated twice more. If no reaction occurred after the third application, the individual was deemed not hypersensitive.^[20]

RESULTS AND DISCUSSION

The herbal lotion formulated with *Gardenia jasminoides* showed effective soothing and moisturizing properties. It spread evenly, absorbed quickly without oily residue, and was easy to wash off. The lotion was smooth, creamy, white, and had a mild floral scent. It remained stable with no clumping or phase separation. With a pH within the normal skin range (4.5–6.5), it is safe for use. Organoleptic evaluations confirmed favourable colour, odour, texture, and after-feel. Aloe vera and glycerine played key roles in hydration, locking in moisture and preventing dryness. Overall, the lotion met all quality parameters, offering a natural, skin-friendly alternative to synthetic products.

Table 4: Evaluation of prepared herbal lotion.

S. No	Organoleptic properties	Result
1.	Colour	Whitish yellow colour
2	Odour	Pleasant odour
3	Texture	Non greasy
4	Absorption	Easily absorbed
5	Irritancy	Non irritancy effect
6.	Sensitivity	Non allergic on the skin
7.	Homogeneity	Good
8.	pH	6
9.	Spread-ability	10.08g.cm/s
10.	Smoothness	Good
11	Washability	Easily washable
12	Patch test	No allergic reaction

Table 4: Stability studies of herbal lotion.

S. No	Parameters	Inference
1.	Colour	whitish yellow
2.	Odour	Pleasant odour
3.	Smoothness	Good
4.	Phase separation	No phase separation
5.	Texture	Non greasy
6.	pH	6.1

During the stability study period, the herbal lotion retained its color, odor, and consistency under room-temperature ($25\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$) conditions. No phase separation, sedimentation, significant change in texture was observed (Table 4).

CONCLUSION

Fresh *Gardenia jasminoides* flowers were collected and their essential oil extracted using a Clevenger apparatus to ensure purity and aroma. This oil served as the main active ingredient in a herbal lotion prepared via standard emulsification. The formulation included aloe vera gel, glycerine, almond oil, cocoa butter, vitamin E, and distilled water, resulting in a stable, smooth, and easy-to-apply lotion. With a pH of 6.1, it matched natural skin pH and was safe for daily use. The lotion had a creamy texture, natural fragrance, uniform appearance, and stable emulsion. It spread easily, absorbed quickly without stickiness or greasiness, and was easily washable. Aloe vera, glycerine, almond oil, and cocoa butter provided strong hydrating effects. Patch tests confirmed it was non-irritating and safe for all skin types. Overall, the lotion offered soothing, moisturizing, and hydrating benefits with a pleasant feel and fragrance. Lightweight and non-greasy, it served as a safe, natural alternative to synthetic skincare products.

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