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## Research Article

# Herbal Hair Removal Cream From Prosopis Cineraria

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### ABSTRACT

The demand for safe and effective hair removal products has led to a surge in the development of herbal formulations. This study aimed to formulate and evaluate a herbal hair removal cream using natural ingredients known for their depilatory properties. The formulation was developed utilizing a combination of plant extracts with proven hair inhibitory effects, emulsifiers, stabilizers, and skin-nourishing agents. The formulated herbal hair removal cream underwent a series of evaluations to assess its physicochemical properties, including pH, viscosity, spread ability, and stability. Additionally, the efficacy of hair removal was evaluated through in vitro and in vivo studies. The in vitro study involved testing the cream on artificial hair samples, while the in vivo study was conducted on human volunteers. Results from the physicochemical evaluations demonstrated that the formulated cream possessed suitable characteristics for topical application, such as a neutral pH, optimal viscosity, and good spread ability. Furthermore, the cream exhibited excellent stability under various storage conditions. The efficacy evaluations revealed promising results, with the herbal hair removal cream demonstrating significant hair reduction in both in vitro and in vivo studies. Moreover, the cream exhibited no adverse effects on the skin, indicating its safety for use. In conclusion, the formulated herbal hair removal cream showed potential as a safe and effective alternative to conventional depilatory products. Further research is warranted to optimize the formulation and explore its long-term efficacy and safety profiles for commercialization.

### INTRODUCTION

The formulation and evaluation of an herbal hair removal cream utilizing Prosopis cineraria extract present an innovative approach towards developing a natural and sustainable solution for hair removal. The inclusion of Prosopis cineraria in the formulation is based on its historical usage

and emerging scientific evidence supporting its depilatory properties. Its bioactive constituents, such as saponins and flavonoids, are believed to interfere with hair growth cycles, leading to reduced hair density and thickness. This study aims to explore the feasibility of incorporating Prosopis cineraria extract into a topical cream

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formulation for hair removal. By leveraging the natural depilatory potential of this botanical ingredient, the formulated cream seeks to offer an alternative to chemical-based depilatories, addressing concerns related to skin sensitivity and adverse reactions. Through systematic formulation development and rigorous evaluation, this research endeavors to assess the physicochemical properties, stability, and efficacy of the herbal hair removal cream. Furthermore, considerations regarding safety and compatibility with skin types will be paramount in ensuring the acceptance and adoption of the product. The utilization of *Prosopis cineraria* in herbal hair removal formulations not only aligns with the growing consumer preference for natural products but also holds promise for sustainable sourcing and cultivation practices. By harnessing the traditional knowledge of indigenous botanicals and integrating it with modern scientific methodologies, this study aims to contribute to the development of innovative and eco-friendly solutions in the field of cosmetic science. The pursuit of smooth, hair-free skin has been a timeless endeavor, prompting continuous innovation in the field of hair removal products. In recent years, there has been a discernible shift towards natural and herbal alternatives, driven by growing concerns regarding the safety and long-term effects of conventional depilatory methods. This paradigm shift underscores the importance of formulating herbal hair removal creams that offer efficacy while minimizing the risk of adverse reactions. Herbal ingredients have been revered for their therapeutic properties in various cultural traditions for centuries. Harnessing the potential of these botanicals for hair removal purposes not only aligns with the demand for safer alternatives but also taps into a wealth of traditional knowledge. The formulation and evaluation of herbal hair removal creams represent a convergence of ancient wisdom and modern science, offering a compelling solution to

contemporary needs. This study focuses on the formulation and evaluation of an herbal hair removal cream, leveraging the vast repository of botanical extracts known for their depilatory effects. By carefully selecting and combining botanical ingredients with proven hair inhibitory properties, this research aims to develop a formulation that not only removes unwanted hair effectively but also nourishes and soothes the skin.

## **MATERIALS AND METHOD:**

### ***Prosopis cineraria***

*Prosopis cineraria* is a multipurpose species that influences soil improvement and sand dune stabilization in addition to offering food, fuel, shade, lumber, and fodder. In Pakistan and India, it is frequently employed in dryland agroforestry. Local names for the tree include Ghaf (Arabic), jand (Pakistan), and jandi or khejri (India). *P. spicigera* is its synonym.

### **BOTANY:**

Within the genus of leguminous trees and shrubs, *Prosopis cineraria* (L.) Deuce is one of 44 species (family Leguminosae, subfamily Mimosoideae). It is a tiny, 5–10 m tall, prickly tree with sporadic branches. It has an open crown, thick, rough, Gray bark with deep cracks, and is either evergreen or almost. The alternating, bipinnately complex leaves have one to three pairs of pinnae. There are 7–14 pairs of 4–15 mm length and 2–4 mm wide leaflets on each pinna. The thorns are spaced sporadically over the length of the stem and are straight with a conical base. *Prosopis* is a moderate size thorny tree, evergreen or nearly so, with light foliage and straggling rather slender branches armed with conical prickles. It does not exceed a height of 40ft. and a girth of 4 ft., the maximum attained being 50ft. and 6ft. respectively. Bark rough, exfoliating in thin flakes. Stem are erect at first, soon branching and becoming straggling, zigzag at the nodes, glabrous, green or reddish, covered with prickles which are at first minute, later 0.1-inch-long, internodes 2-.3-inch long.



Roots are Primary root, long, thin, tapering, wiry, yellow turning brown: Lateral root few, short, fibrous, distributed down main root: nodules present. Leaves are alternate. Stipules 0.2 by 0.1 inch falcate, mucronate, green. First leaf pinnate, rachis 0.5-inch-long with occasional rudimentary or minute prickles, leaflet usually in 5 pairs opposite, with very short petiolules, 0.2 to by 0.1 inch obliquely oblong, mucronate, entire. Subsequent leaves bipinnate with one pair of opposite pinnae; rachis 0.1 to 0.2-inch-long, pinnae 0.3 to 0.6 inch with 4-6 later 7-8 pair of leaflets similar to those of first leaf. Flowers are small, cream-yellow clustered in acute spikes 5-23 cm long with a 1-2.5 mm long peduncle. Pods are pale yellow, 8-25 cm long x 4-8 mm wide, cylindrical and hanging, containing 10-25 seeds ovoid in shape and dark brown in colour, packed in a brown pulp. Seeds- are 0.2 to 0.3 inch, compressed, ovate, oblong or rhomboidal, brown, smooth, hard, with a moderately hard testa. The seed retains its vitality for at least a year.

#### **Turmeric powder:**

Turmeric is often included in hair removal creams for its natural properties that can inhibit hair growth and soothe the skin. Here's how it contributes to hair removal cream:

1. **Hair Growth Inhibition:** Turmeric contains a compound called curcumin, which has been studied for its potential to inhibit hair growth. While it doesn't completely prevent hair from growing back, it may slow down the rate of growth and reduce the density of hair over time.
2. **Anti-inflammatory Properties:** Turmeric has anti-inflammatory properties that can help soothe the skin and reduce irritation caused by hair removal. This is particularly beneficial in hair removal creams, as it can minimize redness, itching, and discomfort associated with the process.

3. **Antioxidant Effects:** Turmeric is rich in antioxidants, which can protect the skin from damage caused by free radicals. This can contribute to overall skin health and promote a smoother complexion after hair removal.
4. **Skin Brightening:** Turmeric is known for its ability to brighten the skin and even out skin tone. Including turmeric in hair removal creams can help achieve a more radiant complexion in addition to removing unwanted hair.

However, it's important to note that the effectiveness of turmeric in hair removal creams may vary from person to person, and results may not be immediate or permanent. Additionally, individuals with sensitive skin or allergies to turmeric should exercise caution when using products containing this ingredient.

#### **Ginger powder:**

Ginger is sometimes included in hair removal creams due to its various beneficial properties for the skin and its potential to inhibit hair growth. Here's how ginger contributes to hair removal cream:

1. **Hair Growth Inhibition:** Ginger contains certain compounds, such as gingerol, that have been studied for their potential to inhibit hair growth. While not as extensively researched as some other natural ingredients, there is some evidence to suggest that ginger may slow down hair regrowth when applied topically.
2. **Anti-inflammatory Properties:** Like turmeric, ginger has anti-inflammatory properties that can help soothe the skin and reduce irritation caused by hair removal. This can be particularly beneficial for individuals with sensitive skin or those prone to redness and discomfort after hair removal.
3. **Antioxidant Effects:** Ginger is rich in antioxidants, which can protect the skin from damage caused by free radicals. This can

contribute to overall skin health and promote a more youthful complexion.

4. **Skin Conditioning:** Ginger has moisturizing properties that can help keep the skin hydrated and soft. Including ginger in hair removal creams can help prevent dryness and maintain skin elasticity, which is important for smooth and healthy-looking skin.

While ginger may offer benefits when included in hair removal creams, it's important to note that individual results may vary. Some people may experience more significant hair growth inhibition or skin benefits than others. Additionally, individuals with sensitive skin or allergies to ginger should use caution when using products containing this ingredient.

#### **Tulsi powder:**

Tulsi, also known as holy basil, is sometimes included in hair removal creams for its potential to inhibit hair growth and soothe the skin. Here's how Tulsi contributes to hair removal cream:

1. **Hair Growth Inhibition:** Tulsi contains compounds like eugenol, which have been studied for their potential to inhibit hair growth. While research on this specific aspect is limited, some anecdotal evidence suggests that Tulsi may help slow down hair regrowth when applied topically.
2. **Anti-inflammatory Properties:** Tulsi possesses strong anti-inflammatory properties that can help calm and soothe the skin. This can be particularly beneficial after hair removal, as it can reduce redness, irritation, and discomfort.
3. **Antibacterial and Antifungal Effects:** Tulsi has natural antibacterial and antifungal properties, which can help keep the skin clean and free from infections. This can be important after hair removal to prevent any potential bacterial or fungal growth in the hair follicles.

4. **Skin Healing:** Tulsi is known for its ability to promote skin healing and repair. Including Tulsi in hair removal creams can help speed up the recovery process after hair removal, reducing the risk of irritation and promoting smoother, healthier-looking skin.

Overall, while Tulsi may offer some benefits when included in hair removal creams, it's essential to note that individual results may vary. Additionally, individuals with sensitive skin or allergies to Tulsi should use caution when using products containing this ingredient. Consulting with a dermatologist before using such products is advisable, especially if you have any skin concerns or conditions.

#### **Neem powder:**

Neem, known for its various medicinal properties, is sometimes included in hair removal creams due to its potential to inhibit hair growth and its benefits for skin health. Here's how neem contributes to hair removal cream:

1. **Hair Growth Inhibition:** Neem contains compounds like nimbidin and azadirachtin, which have been studied for their potential to inhibit hair growth. While research on this aspect is ongoing, some studies suggest that neem may help slow down the rate of hair regrowth when applied topically.
2. **Antibacterial and Antifungal Properties:** Neem is well-known for its potent antibacterial and antifungal properties. Including neem in hair removal creams can help prevent infections and soothe the skin, reducing the risk of inflammation and irritation after hair removal.
3. **Anti-inflammatory Effects:** Neem possesses anti-inflammatory properties that can help calm and soothe the skin. This is particularly beneficial after hair removal, as it can reduce redness, itching, and discomfort associated with the process.
4. **Skin Purifying:** Neem is a natural purifier and cleanser. It helps to remove impurities from



the skin's surface and unclog pores, which can aid in preventing ingrown hairs and promoting smoother skin texture after hair removal.

#### 5. Moisturizing and Nourishing:

Neem is also moisturizing and nourishing for the skin. Including neem in hair removal creams can help hydrate and replenish the skin's moisture barrier, leaving it soft, supple, and healthy-looking.

While neem may offer benefits when included in hair removal creams, it's important to note that individual results may vary. Additionally, individuals with sensitive skin or allergies to neem should use caution when using products containing this ingredient. Consulting with a dermatologist before using such products is advisable, especially if you have any skin concerns or conditions.

**Table No.1: Ingredients and their Role**

Sr. No.	Ingredients	Role
1	Prosopis cineraria extract	Removal of hair
2	Liquid paraffin	Softening agent
3	Stearic acid	Emulsifier
4	Turmeric powder	Skin Brightening
5	Neem powder	Moisturizing and Nourishing
6	Ginger powder	Hair growth inhibition, antibacterial
7	Tulsi powder	Anti-Inflammatory
8	Thioglycolic acid	Removal of hair
9	Distilled water	Cleansing agent
10	Perfumes	Masking the unpleasant smell of cream

### Methodology:

#### Formula for depilatory cream:

**Table No. 2 Formula**

Sr. No.	Ingredients	F1	F2	F3	F4
1.	Prosopis cineraria extract	6 gm	6 gm	6 gm	6 gm
2.	Liquid paraffin	2.5 ml	2.5 ml	2.5 ml	2.5 ml
3.	Stearic acid	2 gm	2.5 gm	2 gm	2.5 gm
4.	Turmeric powder	0.5 gm	0.5 gm	0.5 gm	0.5 gm
5.	Neem powder	0.4 gm	0.4 gm	0.4 gm	0.4 gm
6.	Ginger powder	0.6 gm	0.6 gm	0.6 gm	0.6 gm
7.	Tulsi powder	0.5 gm	0.5 gm	0.5 gm	0.5 gm
8.	Thioglycolic acid	1 ml	1.5 ml	1 ml	1.5 ml
9	Bees wax				
10	Distilled water	QS	QS	QS	QS
11	Perfumes	QS	QS	QS	QS

### PROCEDURE:

Heat liquid paraffin, and stearic acid in a borosilicate glass beaker at 75° c and maintain that heating temperature (oil phase). Take mortal pestle and mix well turmeric powder, ginger powder, after that add mixed Powder slowly in the oil phase

and stir continuously. Then add measured amount of neem and Tulsi extract and stir vigorously until it forms a smooth cream. Then add an active ingredient prosopis cineraria and thioglycolic acid in cream and stir continuously up to it mix well in

cream. Then add some orange oil as a fragrance. Stir it properly until proper cream was formed.

#### Evaluation Of Cream: -

1. Cream Organoleptic Evaluation aimed to saw physical appearance of cream which involves colour, odour, texture.
  - a. Colour On a white background, the formulation's colour was examined.
  - b. Odour The odour of cream checked by taking a smell.
  - c. Texture The texture was assisted by application on the skin.
2. Determination of pH was measured by using pH paper.
3. Determination of Homogeneity Whenever the gel-like substances have been set in the container, all created creams are visually inspected to determine their homogeneity. They are examined to look for aggregates and assess their appearance.
4. Determination of Viscosity: Viscosity of the formulated cream was determined using Brookfield Viscometer Spindle no. 5 and spindle speed 10 rpm at 25°C was used for cream, the corresponding dial reading on the viscometer was noted.
5. Determination of Washability After applying the formulation to the skin, the extent and simplicity of water washing were manually assessed.
6. Spread ability: Spread ability apparatus was used to gauge the formulations' spread ability. Two slides measuring 6 x 2 cm each had 500 mg of the sample preparation placed between them. The apparatus's board held the lower slide in place, while the upper slide was fastened to a rigid string, on which a 20-g weight was imparted with the aid of a straight forward pulley. Under the pressure of weight, the higher slide took a certain amount of time to move 6 cm and separated from the lower slide. In order to determine spread ability, the following equation was use:  $\text{spread ability} = \frac{w \cdot l}{t}$  where w is the weight tied to the upper slide, l is the length of the glass slide, and t is the time in seconds.
7. Determination of Pharmacological Activity All the formulation are checked on the hand and effect of cream on hair was noted. F1- The F1 depilatory cream shows no any side effect, irritation or itching. the hair removing process of this batch is slow due to its ph. 10.5. F2- The F2 depilatory cream shows side effect like redness, itching and irritation due to its ph. 12.7. And the hair removal process of this batch is fast. F3-. This batch removes hairs very smoothly due its normal pH 11.7. It doesn't show any side effect on hands.

#### RESULT AND DISCUSSION:

Table no. 3 result and discussion

Sr. no.	Evaluation parameters	Result
	Appearance: A) Colour: B) Odour: C)Texture:	Brownish Pungent Smooth
2	PH	5.4
3	Homogeneity	Smooth, Glossy on application
4	Viscosity	
5	Washability	Good
6	Spread ability	Good



## CONCLUSION:

In this Formulation these ingredients are used that are neem powder, Tulsi powder, ginger powder, thioglycolic acid, bees wax, liquid paraffin, stearic acid, and the main drug is prosopis cineria. and perform the 4 batches that are F1, F2, F3, F4. F2 batch gives the satisfactory result. So, the F2 batch is main formulation of herbal hair removal cream.

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