

A Research on Formulation and Evaluation of Herbal Beard Balm by Using Coffee

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Abstract: *This research article outlines the formulation and development of herbal beard balm made from a blend of natural ingredients, including coconut oil, almond oil, rosemary oil, kalonji oil, hard paraffin, yellow soft paraffin, extra pure paraffin, beeswax, emulsifying wax, aloe vera gel, glycerin, and vitamin E capsules. Each ingredient was selected for its unique properties and benefits for beard care. Coconut oil provides deep moisturization, while almond oil is rich in vitamins and minerals that promote healthy beard growth. Rosemary oil has antimicrobial properties that help to prevent beard dandruff, and kalonji oil is rich in fatty acids that help to condition and soften beard hair. Hard paraffin, yellow soft paraffin, and extra pure paraffin provide structure and stability to the balm, while beeswax and emulsifying wax create a smooth texture that is easy to apply. Aloe vera gel and glycerin provide hydration and soothe the skin, and vitamin E capsules provide antioxidants that protect against environmental stressors. The resulting herbal beard balm offers a natural, effective solution for men looking to maintain and improve the health and appearance of their beards.*

Keywords: *beard balm.*

I. INTRODUCTION

The Beards have become a popular fashion trend in recent years, with many men seeking ways to maintain and improve the health and appearance of their facial hair. However, maintaining a healthy beard can be a challenge, as it requires proper nourishment and hydration to prevent dryness, itching, and irritation. In response to this growing demand, the development of natural and effective beard care products has become a priority for the personal care industry. This report presents the formulation and development of a herbal beard balm made from a combination of natural ingredients, including coconut oil, almond oil, rosemary oil, kalonji oil, hard paraffin, yellow soft paraffin, extra pure paraffin, beeswax, emulsifying wax, aloe vera gel, glycerin, and vitamin E capsules. The balm was formulated to provide nourishment and hydration to the beard while also promoting healthy growth and preventing irritation. The formulation was optimized through a series of experiments to ensure stability, efficacy, and consumer acceptability. The resulting herbal beard balm offers a natural, effective solution for men looking to improve the appearance and health of their beards

Advantages of beard balm :

- Moisturizing and nourishing the beard and skin beneath it, making it soft and shiny.
- Providing a subtle hold and shaping effect to the beard, making it look well-groomed.
- Stimulating hair growth and improving hair thickness, which can promote a fuller, healthier-looking beard.
- Protecting the skin and hair from environmental damage, such as sun exposure and pollution.
- Soothing and reducing redness and irritation on the skin, making it less itchy and uncomfortable.
- Preventing infections due to the antimicrobial and anti-inflammatory properties of some ingredients, which can help to keep the beard and skin healthy.
- Attracting and retaining moisture to the skin and hair, preventing dryness and flakiness.





- Repairing damaged skin and hair due to the healing properties of some ingredients, such as aloe vera and vitamin E.

Application Method

Balm can be applied topically to the skin using clean hands or a small applicator. Here is a general application method for using balm:

1. Wash the affected area: Before applying the balm, make sure to wash and dry the affectarea thoroughly.
2. Take a small amount of balm: Scoop a small amount of balm using your finger or a small applicator. The amount of balm you need will depend on the size of the affected area.
3. Rub the balm into the skin: Gently rub the balm into the skin using circular motions until it is fully absorbed. Pay extra attention to the affected area and surrounding skin.
4. Repeat as necessary: Depending on the severity of the condition, you may need to apply the balm several times a day. Follow the instructions on the product label or consult with a healthcare professional for specific recommendations.





FORMULATION OF BEARD BALM

Sr. No	INGREDIENTS	QUANTITY	INGREDIENT USE
1. 1 11111 1	COCONUT OIL 	7ml	Coconut oil is a natural oil that has been used for centuries to promote hair growth. It is rich in mediumchain fatty acids that penetrate the hair shaft and nourish the hair from the inside out. Coconut oil also contains vitamin E, which can help to strengthen hair and reduce hair breakage.
2.	KALONJI OIL 	3ml	Kalonji oil, also known as black seed oil, is a highly concentrated oil that is extracted from the seeds of the Nigella sativa plant. It can help to reduce dandruff and other scalp conditions, promote healthy hair growth, and add shine and softness to the hair.
3.	ALMOND OIL	5ml	Almond oil is a natural oil that is rich in vitamins and minerals that are essential for healthy hair growth. It contains high levels of vitamin E, which can help to strengthen hair follicles and reduce hair breakage. Almond oil also

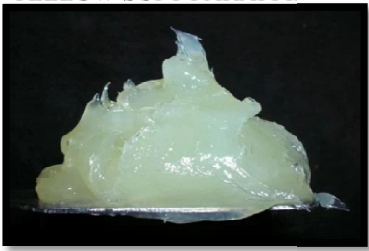



			contains fatty acids that can nourish and moisturize the hair and scalp, promoting healthy hair growth.
4.	ROSEMERY OIL 	2 drops	Rosemary oil is an essential oil that has been shown to promote hair growth. It contains antioxidants that help to stimulate blood circulation to the scalp, which can promote healthy hair growth. Rosemary oil can be mixed with a carrier oil, such as almond oil, and applied directly to the scalp as a conditioning treatment.
5.	BEE SWAX 	4gm	Beeswax is a product made from the honeycomb of the honeybee and other bees. Yellow and white beeswax are used as thickeners, emulsifiers, and as stiffening agents in cosmetics
6.	ALOE VERA 	10gm	Aloe vera is a natural plant that is known for its healing properties. It contains enzymes that can help to repair damaged hair and promote healthy hair growth. Aloe vera can be applied directly to the scalp as a conditioning treatment or added to hair care products.
7.	VITAMINE E CAPSULE	2gm	It is Ideal to stabilize oils and fats in cosmetic products (prevents rancidity).it is an Antioxidant, gives moisturizing and soothing properties on the skin .



			
8.	<p>COFFEE POWDER</p> 	10gm	Coffee is among the most popular beverage world wide . coffee beans are rich in bioactive compounds . Many studies have focused on caffeiens and other component of coffee . coffee beans are rich in polyphenol . promote hair growth .
9.	<p>EMULSIFYING WAX</p> 	1gm	Emulsifying Wax NF is a complete vegetable-derived emulsifying wax used to create oil- in-water emulsions. It can be used to make thick or thin emulsions, depending upon the concentration used. It is Deep moisturizer and Provides smooth consistency to balm
10.	<p>HARD PARAFFIN</p> 	4gm	Barrier-forming



11.	<p>YELLOW SOFT PARAFFIN</p> 	6gm	Skin-protecting
12.	<p>EXTRA PURE PARAFFIN</p> 	1gm	Moisture-sealing

METHOD:

Weigh all the ingredients properly according to formula.

Melt the hard paraffin (4gm) and extra pure paraffin (1gm) then dissolve beeswax (4gm) yellow soft paraffin (6gm) and emulsifying wax (1gm) in it.

Then triturate the coffee powder (10g) in mortar and pestle and add in it.

4. Then add coconut oil (7ml) rosemary oil (2 drops) kalonji oil (3ml) and almond oil (5ml) in it.

Then add Aloe Vera gel (10 gm) and Vitamin E (2 gm) capsules in it and stir the mixture properly.

Let this mixture cool down and solidify.

EVALUATION PARAMETERS OF BEARD BALM :

1. pH measurement:

The pH of the balm was determined at 25 °C using a pH meter, standardized using pH 4.0 and 7.0 standard buffers before use and an average of triplicates was determined.

2. Phase Separation:

The prepared balm was transferred in a suitable wide mouth container. Set aside for storage, the oil phase and aqueous phase separation were evaluated after 24h.

3. Viscosity:

Brookfield Synchro-Lectric Viscometer (Model RVT) with helipath stand was used for rheological studies. The sample (50 g) was placed in a beaker and was allowed to equilibrate for 5 min before measuring the dial reading using a T-D spindle at 1.5, 12 rpm. At each speed, the corresponding dial reading on the viscometer was noted. The spindle speed was successively lowered and the corresponding dial reading was noted. The measurements were carried in triplicate at ambient temperature. Direct multiplication of the dial readings with factors given in the Brookfield viscometer catalog gave the viscosity in centipoises. An average of three replicates was computed.



4. Spreadability:

The spreadability of test samples was determined using the following technique: 0.5 g test formulation was placed within a circle of 1 cm diameter pre-marked on a glass plate over which a second glass plate was placed. A weight of 500 g was allowed to rest on the upper glass plate for 5 min. Spreadability refers to the area covered by a fixed amount of cream sample after the uniform spread of sample on the glass slide. The increase in the diameter due to spreading of the test formulation was noted. Average of three determinations was noted.

5. Irritancy Test:

The balm was applied on the dorsal left-hand surface. Irritancy, erythema, edema was checked every hour up to 24h for 7 days and reported.

RESULT



Sr . No	PARAMETERS	RESULTS
1	Colour	Brownish
2	Odour	Aromatic
3	Texture	Smooth
4	Ph	6.63
5	Spreadability	8.83 g. cm / sec
6	Phase separation	No phase separation
7	Viscosity	13,400 cps
8	Patch test	No Allergenic

Organoleptic Evaluation

Colour : Brownish

Odour : Aromatic

Texture: uniform Smooth

Consistency : Semi solid

Homogeneity : Good

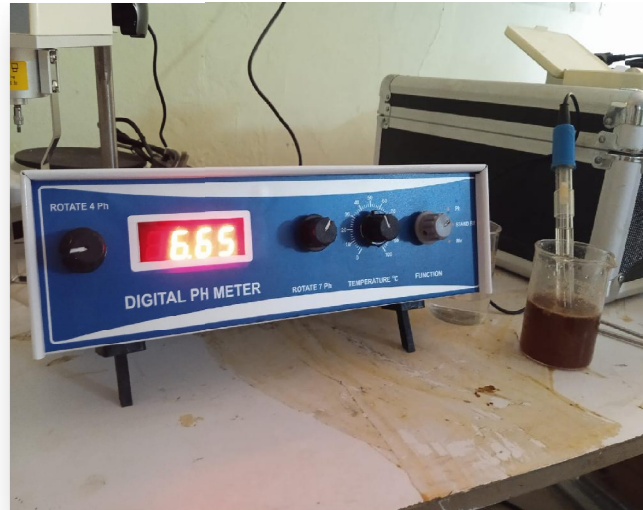


pH Determination

The pH of the cream was measured by dispersing 1 g of formulation in 10 mL distilled water. Measurements were taken in triplicate.

Ph Value : 6.63

The pH of 6.63 falls within the acceptable skin pH range (5.5–6.5), ensuring compatibility with the delicate under-eye region. Maintaining this pH reduces the risk of irritation and supports skin barrier integrity. The stable pH also indicates that the herbal extracts did not significantly alter the formulation's acidity, suggesting good compatibility among ingredients.



Spreadability

Study Spreadability was evaluated using the glass slide method. The time required for separation of slides under a specified weight was measured.

$$\text{Spreadability (S)} = M \times L / T$$

Where:

M = Weight tied to upper slide (500g)

L = Length of slide (5.3cm)

T = Time in seconds Observed average time = 300 seconds

$S = (500 \times 5.3) / 300$ S = 8.83 g·cm/sec

The spreadability value of 8.83 g·cm/sec indicates good ease of application. The formulation spreads easily without excessive greasiness, which is desirable for under-eye products. Adequate spreadability ensures uniform distribution of active ingredients and enhances patient compliance.

Viscosity Measurement

Viscosity was measured using a Brookfield viscometer at 25°C

Spindle Speed Viscosity (cP)

1.5 rpm 1,19,133

13rpm 13,400

Average viscosity: 13,400 cP



The slight decrease in viscosity with increasing rpm indicates pseudoplastic (shear-thinning) behavior. This property is desirable in topical creams as it allows easy spreading during application while maintaining thickness at rest.



Homogeneity Test

The beard balm was pressed between fingers to detect coarse particles or phase separation. No lumps, aggregates, or oil separation were observed. The formulation showed uniform dispersion of extracts and caffeine. This confirms effective emulsification and proper incorporation of herbal extracts.

Washability Test

The balm was applied to the beard and washed with tap water. It was easily removable without leaving an oily residue. This indicates the suitability of oil-in-water emulsion for cosmetic application, especially for facial and under-eye use.

Stability Studies

Stability studies were conducted for one month under: • Room temperature ($25 \pm 2^\circ\text{C}$) • No redness • No itching • Accelerated condition ($40 \pm 2^\circ\text{C}$, 75% RH)

Irritation Test (Patch Test – Preliminary)

A small quantity of balm was applied to the forearm of healthy volunteers ($n=5$) for 24 hours.

Observation:

No redness

No itching

No burning sensation

Overall Performance Assessment

The formulation successfully met the objectives:

Suitable pH (6.63)

Good spreadability (8.83 g-cm/sec)

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Acceptable viscosity (13,400 cP)
No phase separation
Non-irritant

DISCUSSION

The balm was designed to hydrate and feed the beard, encourage healthy growth, and reduce irritation. To guarantee stability, effectiveness, and customer acceptance, a number of trials were conducted to perfect the formulation. For men wishing to enhance the beauty and health of their beards, the resultant herbal beard balm provides a natural, efficient solution

Balms are semisolid formulations that are applied to the skin to offer medicinal effects, hydration, and protection. They often include butters, oils, and waxes that form a barrier on the skin to transport active ingredients and stop moisture loss. Because of their antibacterial, anti-inflammatory, and antioxidant qualities, herbal balms which contain natural extracts and essential oils have grown in popularity. These days, balms are frequently used in cosmetics, such as body, lip, and beard balms, which provide both practical and cosmetic advantages. Herbal beard balm is a semi-solid mixture that supports healthy skin below facial hair while nourishing it.

Beard balm is a conditioning product designed specifically for facial hair. It typically includes, Coconut oil, Almond oil, Kalonji oil, Rosemary oil, hard paraffin, extra pure paraffin, Aloe vera gel, Vitamin E Capsule, Coffee powder, beeswax, Emulsifying wax, Yellow soft paraffin. The selected ingredients were carefully chosen based on their ability to moisturize the skin, promote healthy beard growth, and provide styling support. The prepared beard balm exhibited desirable physicochemical characteristics, including a smooth texture, uniform consistency, and pleasant aroma. The balm showed good spreadability, ensuring easy application on beard hair and underlying skin.

A beard balm works as a leave-in conditioner which will moisturize, condition, style and soften your beard. which helps seal in moisture. All of these ingredients are combined to help promote proper beard growth and keep your beard healthy and smelling its best.

II. CONCLUSION

In conclusion, The present study successfully focused on the formulation and evaluation of a herbal beard balm using natural ingredients with beneficial properties for beard care. The formulation was designed to provide conditioning, nourishment, and mild styling effects while avoiding the adverse effects commonly associated with synthetic products. The prepared herbal beard balm exhibited satisfactory physicochemical properties, including appropriate viscosity, smooth texture, good spreadability, and stability under different storage conditions. The evaluation parameters such as appearance, homogeneity, pH, and stability confirmed that the formulation is suitable for topical application and remains consistent over time.

The incorporation of herbal ingredients contributed to enhanced moisturizing, antimicrobial, and soothing properties, which are essential for maintaining healthy beard hair and underlying skin. The product demonstrated no signs of irritation, indicating its safety and compatibility for regular use.

The creation and assessment of the herbal beard balm have shown its effectiveness and safety as a complete beard care solution. Coconut oil, almond oil, kalonji oil, and aloe vera gel are among the carefully chosen components that provide a variety of advantages for the beard and underlying skin. It has been discovered that the balm successfully hydrates and nourishes the beard, giving it more manageability, softness, and gloss. A fuller and healthier-looking beard is encouraged by the use of rosemary and kalonji oils, which promote hair growth. Aloe vera gel has calming qualities that lessen skin inflammation and redness. Coffee is rich in polyphenols such as CQAs on hair growth using human DPCs. Crucially, the herbal beard balm has been judged safe for usage after thorough testing, guaranteeing the user's wellbeing.



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