



Research Article

Formulation and Evaluation of Herbal Lip Balm

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This study aimed to develop and evaluate a herbal lip balm using naturally derived ingredients such as wax, plant oils, and herbal extracts. The formulation was designed to provide good texture, smooth application, and stability. Various evaluation parameters, including appearance, consistency, melting point, pH, spreadability, and stability, were assessed to ensure product quality. The results indicated that the lip balm possessed desirable physical properties, remained stable under different conditions, and was safe and non-irritating for use. Additionally, the presence of herbal ingredients enhanced moisturizing and protective effects. Overall, the formulated herbal lip balm proved to be an effective and safe natural alternative to synthetic lip care products, with potential for regular use and commercial application.

Keywords: Herbal lip balm, moisturizing, Evaluation parameter, Safety, Healthy lips Medicinal ingredients.

INTRODUCTION

Lips are delicate and sensitive structures of the human body that lack sebaceous (oil) glands, making them more prone to dryness, cracking, and environmental damage. Therefore, regular care and protection of lips are essential. Lip balms are commonly used cosmetic preparations that help in moisturizing, softening, and protecting the lips from harsh conditions. [1] In recent years, there has been a growing preference for herbal lip balms due to their natural composition, safety, and reduced risk of side effects compared to synthetic products. Herbal formulations not only provide nourishment but also offer additional therapeutic benefits such as antioxidant, anti-inflammatory, and healing properties. The present formulation of herbal lip balm is prepared using natural ingredients like butterfly pea flower and saffron, which act as natural

colorants and antioxidants. Honey serves as a humectant that helps retain moisture in the lips, while almond oil and vegetable oil act as emollients to soften and smooth the lips. Ghee provides deep nourishment and aids in repairing dry and damaged lips. [2] Vitamin E is included as an antioxidant that protects lips from damage and also improves product stability. Beeswax is used as a base to provide hardness and structure to the lip balm, while paraffin wax enhances stability and increases the melting point. Petroleum jelly acts as an occlusive agent that forms a protective barrier on the lips, preventing moisture loss. Additionally, butterscotch essence is added to improve the flavor and overall user acceptability. [3] Thus, this herbal lip balm formulation combines natural ingredients to provide effective moisturization, protection, and nourishment, making it a safe and suitable product for regular use.

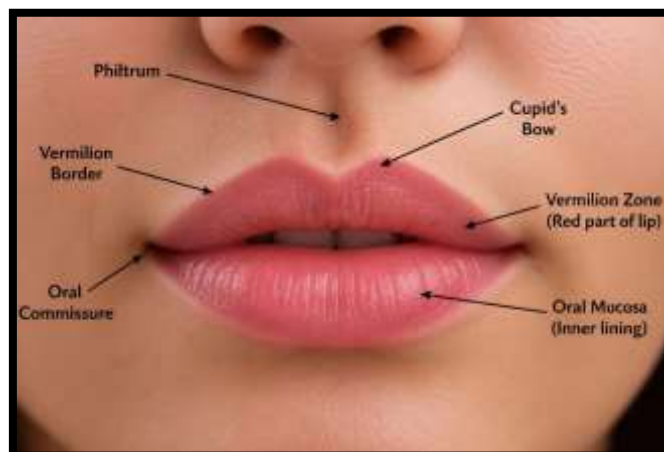


Fig-1 Structure of Lip

The lips are composed of several structural components that contribute to their function as well as their appearance. A brief overview of lip anatomy is presented below:

- **Skin:** The outer surface of the lips is covered by skin similar to that of the rest of the body; however, it is comparatively thinner and more delicate, making it more sensitive.
- **Vermilion border:** This is the distinct line that demarcates the red-colored portion of the lips from the adjacent normal skin.
- **Vermilion zone:** This region represents the reddish part of the lips, which appears red due to a rich network of underlying blood vessels.
- **Philtrum:** The philtrum is a vertical groove located in the midline of the upper lip, extending from the base of the nose to the lip.
- **Cupid's bow:** It refers to the central double-curved or V-shaped contour of the upper lip, contributing to its characteristic shape.
- **Oral mucosa:** The inner surface of the lips is lined by a thin, moist mucosal layer, which differs from the external skin and helps maintain hydration.
- **Labial glands:** The lips contain small glands that secrete saliva, aiding in lubrication and facilitating functions such as speech and mastication.
- **Muscles:** The primary muscle associated with the lips is the orbicularis oris, which encircles the mouth and is responsible for movements like puckering, smiling, and speaking.
- **Nerve endings:** The lips possess a high density of sensory nerve endings, making them highly responsive to stimuli such as touch, temperature, and pain.
- **Blood vessels:** A rich vascular supply is present in the lips, contributing to their reddish coloration and supporting overall tissue health.



Fig-2 Herbal Lip Balm

Herbal lip balm is a natural cosmetic product made from plant-based ingredients like beeswax, oils, and herbal extracts, used to moisturize, protect, and nourish the lips. Unlike synthetic products, it is free from harmful chemicals and safe for regular use. Since lips lack oil glands, they are prone to dryness and cracking, making external moisturization essential. Herbal ingredients such as coconut oil and almond oil help maintain softness, heal chapped lips, and provide a natural tint. [4] Lip moisturizing refers to maintaining hydration in the lips to keep them soft, smooth, and protected from dryness and damage. It involves using suitable products like lip balm to retain moisture and prevent cracking. [5] Herbal lip balm offers several benefits, including keeping lips hydrated, preventing dryness, healing cracks, and protecting against environmental damage. It is safe, eco-friendly, and provides essential nourishment, resulting in healthy, soft, and smooth lips.

Benefits of lip Balm

- Keeps lips soft, smooth, and well-moisturized
- Prevents dryness, chapping, and cracking
- Nourishes lips with natural oils and herbal ingredients

- Helps heal damaged or dry lips
- Forms a protective barrier against harsh weather (sun, wind, cold)
- Safe for regular use due to natural, chemical-free composition
- Provides a natural shine and healthy appearance
- Reduces irritation and soothes sensitive lips
- Eco-friendly and gentle on skin [6]

Plat Profile

1. **Butterfly Pea Flower - Butterfly** pea flower (*Clitoria ternatea*) is used in herbal lip balm mainly as a natural colorant and protective ingredient. It gives a beautiful blue to purple shade, which can change slightly depending on the pH of the formulation. Apart from its coloring property, it is rich in antioxidants like anthocyanins that help protect the lips from damage caused by environmental factors. It also has mild soothing and anti-inflammatory effects, making the lips feel soft and healthy. Overall, it enhances both the appearance and the nourishing quality of the lip balm without using synthetic dyes. [8]



Fig-3 Butterfly Pea Flower

Butterfly pea flower (*Clitoria ternatea*) is used in herbal lip balm mainly as a natural colorant and protective ingredient. It gives a beautiful blue to purple shade, which can change slightly depending on the pH of the formulation. Apart from its coloring property, it is rich in antioxidants like anthocyanins that help protect the lips from damage caused by environmental factors. It also has mild soothing and anti-inflammatory effects, making the lips feel soft and healthy. Overall, it enhances both the appearance and the nourishing quality of the lip balm without using synthetic dyes.

2. Saffron:-

Saffron (*Crocus sativus*) is a valuable ingredient used in herbal lip balm for its nourishing and enhancing properties. It helps improve the natural color of the lips by giving a light golden or reddish tint and is often associated with brightening effects. Saffron is rich in antioxidants, which protect the lips from dryness and environmental damage. It also has soothing and healing properties that help in repairing chapped or cracked lips. In addition, it adds a mild natural fragrance, making the lip balm more appealing and luxurious.



Fig-4- Saffron [9]

3. Honey: -

Honey is a natural ingredient commonly used in herbal lip balm for its moisturizing and healing properties. It acts as a humectant, which means it helps attract and retain moisture, keeping the lips soft

and hydrated. Honey also has antibacterial and soothing effects, which can help heal dry, cracked, or chapped lips. In addition, it adds a slight natural sweetness and smooth texture to the lip balm, making it both effective and pleasant to use. [10]



Fig-5- Honey

4. Almond Oil-

Almond oil is a nourishing ingredient commonly used in herbal lip balm for its excellent moisturizing properties. It is rich in vitamins, especially vitamin E, which helps to soften and protect the lips from dryness

and damage. Almond oil easily absorbs into the skin, providing deep hydration and making the lips smooth and supple. It also helps in repairing chapped lips and improving their overall texture, giving a healthy and natural shine.



Fig-6- Almond Oil

5. Vegetable Oil: -

Vegetable oil is commonly used in herbal lip balm as a base ingredient that provides moisture and smoothness. It helps to soften the lips and prevents

dryness by forming a light protective layer. Being rich in natural fatty acids, it nourishes the lips and improves their texture. Vegetable oil also enhances the spreadability of the lip balm, making it easy to apply and giving a smooth, glossy finish. [11]



Fig-7- Vegetable Oil

6. Ghee: - Ghee is a traditional natural ingredient used in herbal lip balm for its deep moisturizing and healing properties. It is rich in healthy fats and vitamins that help nourish and soften the lips.

Ghee forms a protective layer that prevents dryness and keeps the lips hydrated for a longer time. It also helps in repairing cracked or chapped lips and gives a natural softness and shine, making the lips look healthy and smooth



Fig-8- Ghee

7. Vitamin-E:-

Vitamin E capsule is commonly used in herbal lip balm for its strong antioxidant and nourishing properties. The oil inside the capsule helps protect the lips from damage caused by free radicals and

environmental factors. It deeply moisturizes the lips, prevents dryness, and supports healing of cracked or chapped lips. Vitamin E also improves the texture and shelf life of the lip balm by acting as a natural preservative, keeping the product stable for a longer time. [12]



Fig-9- Vitamin-E

8. Bees Wax: -

Beeswax is an important ingredient in herbal lip balm that provides structure and firmness to the product. It helps the lip balm maintain its solid form while allowing smooth application. Beeswax forms a

protective barrier on the lips, which locks in moisture and prevents dryness without clogging pores. It also has mild antibacterial and soothing properties, helping to protect and heal chapped lips while keeping them soft and hydrated.



Fig-10- Bees Wax [13]

9. Liquid Paraffin: -

Liquid paraffin is used in lip balm as a moisturizing and protective base. It forms a thin barrier on the lips that helps lock in moisture and prevent dryness. This

keeps the lips soft, smooth, and protected from environmental factors like wind and cold. It also improves the texture of the lip balm, making it easy to spread and giving a smooth, glossy finish.



Fig-11-Liquid Paraffin

10. Petroleum Jelly: -

Petroleum jelly is widely used in lip balm as a strong moisturizing and protective ingredient. It forms a barrier on the lips that helps lock in moisture and

prevents dryness and cracking. This makes the lips feel soft, smooth, and hydrated for a longer time. It also protects the lips from harsh environmental conditions like wind and cold, and helps in healing chapped or damaged lips by reducing moisture loss



Fig. no:-12

11) Butterscotch Essence:-

Butterscotch essence is used in herbal lip balm mainly to enhance its fragrance and flavor. It gives a sweet, pleasant aroma that makes the lip balm more

enjoyable to use. Although it does not provide significant medicinal or moisturizing benefits, it improves the overall sensory appeal of the product, making it more attractive and user-friendly.



Fig.No-13 [14]

MATERIAL AND METHODS**Table-1- Ingredients used in preparation of herbal hair oil [15]**

Sr.no	Ingredients	Quantity
1.	Petroleum Gelly	5g
2.	Bees Wax	3g
3.	Liquid Paraffin	1g
4.	Vegetable Oil	2/7g
5.	Almond Oil	3g
6.	Ghee	3g
7.	Honey	1g
8.	Saffron	0.2g
9.	Butterfly Pea Flower Extract	0.5g
10.	Vitamin-E	0.3g
11.	Butterscotch Essence	0.1g

Method of Preparation –**1: Herbal Extract Preparation: -**

Soak saffron in 1 tsp warm almond oil (40 C) for 10-15 minutes Prepare butterfly pea flower extract by soaking flowers in warm vegetable oil and heat for 10-15 minutes and maintain temperature upto 40°C (by using thermometer). [16]

Step 2: Melting the Base (Wax Phase)

Using a water bath, melt beeswax, liquid paraffin, and petroleum jelly in a clean glass beaker. Avoid direct heat of flame, as wax may catch fire or lose properties. [17]

Step 3: Oil Phase

Add almond oil, and ghee to melted wax. [18]
Stir continuously using a glass rod.
Maintain temperature around 60–65°C.

Step 4: Cooling Phase

Remove from heat.
Allow mixture to cool below 45°C. [19]
Add honey, vitamin E, butterscotch essence, and herbal extracts (saffron, butterfly pea).
Mix gently to avoid air bubbles. [20]

Step 5: Pouring

Pour immediately into clean, dry lip balm containers.
Allow to solidify at room temperature (25°C) for 30 min

Method Performed By Practically:



Herbal Lip Balm

Evaluation Parameter: -

1. Organoleptic Evaluation (Physical Appearance)

Parameters	Method	Result
Color	Visual Inspection	Uniform light Herbal Tint
Odor	Small Test	Pleasant Atomic Aroma
Texture	Touch Test	Smooth Non grisly
Apperance	Visual (no crack , no bubble)	No Crack , No air bubble

2. Melting Point Test

Determines product stability

Capillary Tube Method – Take a capillary tube sealed one end and then fill a small quantity of lipbalm into a capillary tube. Attach capillary tube to thermometer then place in a water bath. Heat gradually and note the temperature at which lipbalm melts, Standard range: 65°C

3. Spreadability Test

Ensure smooth and ease of application Place a small amount of lipbalm between two glass slides and apply known weight (10 g) on upper slide. Measure the time taken for the slides to spread.

$$\text{Spreadability} = (\text{Weight} \times \text{Length}) / \text{Time} = (10 \times 4) / 10 = 4$$

Good spreadability: 4 cm diameter.

Weigh 1g of lipbalm and dissolve in 10 ml distilled water, stir continuously. Measure pH using a calibrated pH meter and note it.

pH range: 6.0 (near skin pH) [22]

5. Hardness Test

Take lipbalm and apply pressure on lipbalm using finger to check firmness and texture. Moderate firmness (soft texture)

6. Stability Study

Observe for color change, phase separation, odor change, texture change Sample was stored under room temperature and observe lipbalm weekly. While observation color, phase, odor and texture has not changed and has kept stable for 3 months. Stability of Lipbalm for 3 months

7. Skin Irritation Test

Apply lipbalm on skin of hand/leg leave it for few hours and observe for skin irritation. Redness, itching

and swelling does not occurs. No skin irritation for Lipbalm

water-soluble
oil – insoluble

8. Solubility Test

Take small quantity of lipbalm, add different solvents such as water and oil. Observe solubility, lipbalm is solubles in oil and insoluble in water

Difference Between Marketed and Our formulation

Our Formulation	Marketed Formulation
Homemade herbal lip balm uses natural ingredients like oils, waxes, and herbal extracts, and is customizable but may vary in quality and has a shorter shelf life. Its evaluation is basic (color, texture, melting point, etc.).	Homemade herbal lip balm uses natural ingredients like oils, waxes, and herbal extracts, and is customizable but may vary in quality and has a shorter shelf life. Its evaluation is basic (color, texture, melting point, etc.).

RESULT AND DISCUSSION

The herbal lip balm was successfully prepared using natural ingredients. The formulation showed good appearance, smooth texture, and uniform consistency with a pleasant color and flavor. The lip balm exhibited good spreadability, suitable melting point, and remained stable without any change in color, odor, or texture. The pH was within the safe range, and no irritation was observed during application. The presence of natural ingredients like butterfly pea flower, saffron, honey, and oils provided moisturizing, antioxidant, and protective effects. Beeswax and paraffin wax contributed to hardness and stability, while petroleum jelly acted as a base. Overall, the formulation was found to be safe, stable, and effective for moisturizing and protecting lips. [22]

CONCLUSION

The herbal lip balm was successfully formulated using natural ingredients and showed good physical properties, stability, and safety. It provided effective moisturization, protection, and a pleasant appearance without causing any irritation. The study confirms that herbal lip balm is a safe, effective, and suitable alternative to synthetic products with potential for regular use and commercialization.

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