

A RESEARCH ON HERBAL LIP BALM WITH NATURAL SPF**Sakshi A. Temak*¹, Shruti K. Bhagyan², Om R. Mandule³, Ajay S. Mule⁴**

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ABSTRACT

The present study focuses on the formulation and evaluation of an herbal lip balm containing natural SPF ingredients such as carrot seed oil, karanja seed oil, candelilla wax, shea butter, vitamin E, hibiscus flower powder, and almond oil. These natural ingredients help to moisturize, nourish, soften, and protect the lips from dryness and harmful environmental conditions. Herbal lip balm is a natural cosmetic product widely used to keep the lips healthy, smooth, and attractive. The herbal lip balm was prepared by the homogeneous mixing method and evaluated for different parameters such as physical appearance, pH, melting point, spreadability, and stability. The pH of the formulation was found to be between 5.5 and 6.5, which is suitable for lip application. The prepared lip balm showed smooth texture, good stability, easy spreadability, and effective protection against dry and chapped lips. The study indicates that the formulated herbal lip balm is safe and effective for daily lip care.

KEYWORDS: Herbal lip balm, Natural SPF, Karanja oil, Carrot seed oil, UV protection, Herbal cosmetics.

INTRODUCTION

Cosmetics are integral to modern lifestyles, with rising demand for natural and herbal products in personal care. Rooted in ancient folk medicine, herbal cosmetics provide antimicrobial, anti-inflammatory, and cytotoxic benefits, offering safer alternatives to synthetic options that often cause side effects. Lip coloring products like jelly, balm, and lipstick come in diverse shades and textures to enhance beauty. Organic ingredients ensure safety, while cosmeceuticals add therapeutic effects for skin healing and protection. Lip balms uniquely moisturize by forming a protective oily layer without dyes. This research develops an herbal lip balm with minimal side effects, embracing natural cosmeceutical trends.

The Anatomy of Lip

The lips are soft, movable structures forming the opening of the mouth. They play an important role in speech, facial expression, food intake, and aesthetics. The anatomy of lips consists of multiple layers and specialized regions that influence both their function and appearance.

1. Skin:-The outermost layer of the lips is composed of skin, similar to the rest of the body. However, lip

skin is:

- Thinner and more delicate
 - Lacks sweat glands
 - More prone to dryness and damage
2. Vermilion Border:-The vermilion border is the visible line that separates the lip from the surrounding skin.
- It defines the shape of the lips
 - Important in cosmetic appearance
3. Vermilion Zone :-The vermilion zone is the reddish portion of the lips.
- Appears red due to rich blood supply
 - Lacks melanin, making lips sensitive to sunlight
4. Philtrum:-The philtrum is a vertical groove in the middle of the upper lip.
- Extends from the nose to the upper lip
 - Contributes to facial symmetry
5. Cupid's Bow:- The Cupid's bow is the V-shaped curve in the center of the upper lip.
- Enhances lip aesthetics
 - Important in cosmetic and reconstructive procedures
6. Oral Mucosa:- The inner lining of the lips is called oral mucosa.
- Thin and moist tissue

- Helps maintain hydration
 - Contains minor salivary glands
7. Muscles and Nerve Endings :-The main muscle is the orbicularis oris, responsible for lip movement Functions include:
- Speaking
 - Smiling
 - Puckering
 - Lips have dense nerve endings, making them highly sensitive to:
 - Touch
 - Temperature
 - Pain

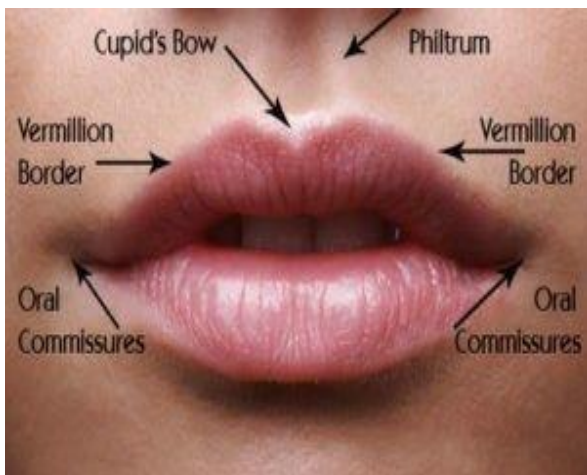


Fig.No. 1: Anatomy Of Lip.

Lip Related Problems

Lip health can be affected by various conditions, often exacerbated by environmental, infectious, or lifestyle factors. Key issues include.

- **Dry lips:** Caused by moisture loss from cold weather, low humidity, or habitual lip-licking; symptoms involve tightness, cracking, or peeling.
- **Chapped lips:** A severe form of dryness leading to pain, discomfort, bleeding; triggered by prolonged exposure to sun, wind, or harsh weather.
- **Cold sores (fever blisters):** Painful, fluid-filled blisters near the lips due to herpes simplex virus; highly contagious.
- **Angular cheilitis:** Inflammation and cracking at mouth corners from bacterial/yeast infections, nutritional deficiencies, or excess moisture.
- **Lip infections:** Resulting from bacteria, viruses, or fungi; marked by swelling, redness, pain, pus-filled blisters, or sores.
- **Allergic reactions:** Triggered by ingredients in foods, cosmetics, or lip products; cause swelling, itching, redness, or blistering.
- **Lip discoloration:** Darkening from sun exposure, smoking, medications, or underlying health issues.

Types of lip balm

Lip balms are formulated for specific needs, offering protection, hydration, and treatment based on

environmental conditions and lip concerns. Common types include.

1] UV filter lip balm: Provides sun protection with SPF; ideal year-round, especially in summer or high-UV areas to prevent sunburn and discoloration.

2] Nourishing lip balm: Rich in emollients and vitamins; best for winter to combat dryness from cold, dry air and restore lip barrier function.

3] Moisturizing lip balm: Delivers quick-absorbing hydration; suitable for dry lips anytime, though less effective in extreme cold where splitting may occur.

4] Medicated lip balm: Contains antiseptics or healing agents (e.g., for chapped or infected lips); use cautiously as directed for softening and antimicrobial effects.

5] Tinted lip balm: Combines hydration with sheer color; versatile for daily wear year-round, enhancing appearance without full lipstick commitment.

MATERIAL AND METHODS

Main Active Ingredients (API)

- 1] Karanja seed oil
- 2] Carrot seed oil

1) Karanja Seed Oil

Category	Details
Class	Magnoliopsida
Family	Fabaceae
Sub family	Faboideae
Genus	Pongamia
Species	Pongamia pinnata
Common name	Karanja
Botanical name	Pongamia pinnata (L.) Pierre

Chemical Constituents

Karanja seed oil contains flavonoids such as karanjin and pongamol, fixed oils, oleic acid, linoleic acid, palmitic acid, stearic acid, and various antioxidants. It also contains Vitamin E and bioactive compounds possessing anti-inflammatory, antimicrobial, antioxidant and wound healing properties. Karanja oil is widely used in herbal formulations due to its moisturizing, soothing and natural UV-protective activity. The oil helps in protecting dry and chapped lips, improves skin hydration and supports healing of damaged skin tissues. Its antimicrobial and anti-inflammatory actions make it beneficial in preventing infections and irritation. Karanja seed oil is also known for its emollient properties, which help maintain softness and smoothness of the lips.

Uses

- Natural sunscreen agent due to the presence of karanjin.
- Anti-inflammatory property helps reduce irritation and swelling.
- Antimicrobial activity helps prevent microbial infections.
- Moisturizing agent that prevents dryness and chapped lips.
- Antioxidant property protects lips from environmental damage.

- Wound healing property supports repair of cracked lips.
- Emollient action helps maintain soft and smooth lips.
- Used in herbal cosmetic formulations for lip care and skin protection.
- Helps improve lip texture and provides nourishment.
- Provides natural UV protection and enhances lip balm effectiveness.

2. carrot seed oil

Category	Details
Class	Magnoliopsida
Family	Apiaceae
Sub family	Apiodeae
Genus	Daucus
Species	Daucus carota
Common name	Carrot
Botanical name	Daucus carota L.

Chemical Constituents

Carrot seed oil contains carotenoids, beta-carotene, flavonoids, Vitamin A, Vitamin E, Vitamin C, tocopherols, and essential fatty acids. It also contains bioactive compounds such as carotol, daucol, limonene and pinene, which possess antioxidant, anti-inflammatory and antimicrobial properties. Carrot seed oil is widely used in herbal cosmetic formulations due to its nourishing and skin-protective effects. The antioxidant activity of carrot seed oil helps protect lips from oxidative damage and environmental stress. It also provides moisturizing and rejuvenating effects, helping to maintain soft, smooth and healthy lips. Carrot seed oil is known for its natural UV-protective properties,

Formulation

Sr.no.	Ingredients	Biological action in the preparation	Amount use in preparation
1	Candelilla Wax	Base	1.5g
2	Shea Butter	Humectant	1.5g
3	Karanja seed oil	Uv- protection anti-oxidant	1.0 ml
4	Carrot seed oil	Uv- protection, anti-inflammatory	0.5ml
5	Almond oil	Moisturizer	1.8ml
6	Hibiscus flower powder	Coloring agent	0.2g
7	Vitamin E oil	Preservative	0.5ml

METHODOLOGY

Preparation Method

Melting of Candelilla Wax (Water Bath Method)
↓
Addition of Shea Butter → Melt Completely
↓
Addition of Almond Oil → Mix Thoroughly
↓
Addition of Karanja Oil + Carrot Seed Oil
↓
Addition of Hibiscus Powder → Uniform Mixing
↓
Addition of Vitamin E (Antioxidant)

making it beneficial in herbal lip balm formulations with natural SPF.

Uses

- Natural sunscreen agent with UV-protective property
- Rich in antioxidants that protect lips from environmental damage
- Moisturizing agent that prevents dryness and chapped lips
- Anti-inflammatory property helps soothe irritated lips
- Antimicrobial activity helps prevent infections
- Nourishes and rejuvenates damaged skin tissues
- Helps maintain soft, smooth and healthy lips
- Used in herbal cosmetic and lip care formulations
- Promotes healing of cracked and dry lips
- Enhances the effectiveness of herbal lip balm with natural SPF

MATERIAL AND METHODS

Water bath	Glass rod
Bunsen burner	China dish
Spatula	Filter paper
Weighing balance	Beaker
Tipond stand	Glass slide

Collection and extraction

All the medicinal plants and herbs are selected for lip balm for lip uv protection, moisturizer, regenerative are karanja seed oil, carrot seed oil, vitamin E, Shea Butter, candelilla wax, almond oil, these materials are collected from local market.

↓
Pour into Lip Balm Containers
↓
Cooling & Solidification
↓
Finished Herbal Lip Balm



Fig.No.2: Formulation Of Lip Balm.

Evaluation Of Lipbalm

1. **Melting Point:** For melting point, the sample of lip balm was taken in nin a glass capillary whose one end was sealed by flame. The capillary containing drug was dipped in liquid paraffin inside the melting point apparatus which was equipped with magnetic stirring facility. Melting was determined visually, and melting point was reported.
2. **Organoleptic Properties:** The lip balm was studied for the basic organoleptic characters such as colour, odour, taste and appearance.
3. **Test of spreadability:** Research Through Innovation. Sli The product was applied (at the uniformity in the formation of the protective layer and whether the stick fragmented, deformed or broke during application.
 G – Good: uniform, no fragmentation; perfect application, without deformation of the lip balm.
 I – Intermediate: uniform; leaves few fragments; appropriate application; little deformation of the lip balm.
 B – Bad: not uniform; leaves many fragments; difficult or inappropriate application, intense deformation of the lip balm.
4. **pH measurement:** The pH study was carried out by dissolving 1 gm of sample into 100 ml water. The pH measurement was done using pH paper.
5. **Stability studies:** Prepared lip balm was placed for accelerated stability studies at room temperature (25.0 ± 3.0 °C), refrigeration (4 ± 2.0 °C) and oven temperature (40.0 ± 2.0 °C) for 30 days. After 30 days, it was again characterized for organoleptic properties, melting point, spreadability and pH

RESULT

All the evaluation tests were done the results were

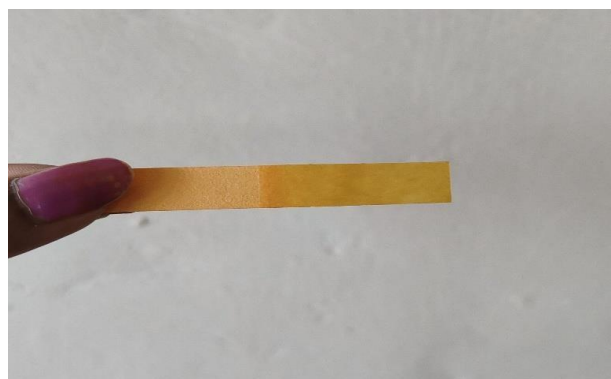
recorded in a form of table.

Organoleptic Properties

Colour	Deep red
Odour	Herbal ingredients
Taste	Tasteless
Apperance	Smooth

Melting Point:- Melting point of lip balm was found to be in the range of 63 , which matches with the appropriate melting point of between 60-75.

pH test:- The pH of lip balm was near to neutral pH i.e. 5.5.



Test of Spreadability:- Prepared lip balm was tested for its ability of spreading which initially has shown uniform application in room temperature.



Uv -test for lip balm:- Prepared lip balm was tested for UV protection using UV spectrophotometry. The formulation showed absorbance in the UV region, indicating natural SPF activity and protection against harmful UV rays.



DISCUSSION

The prepared herbal lip balm showed good stability and smooth application. The presence of natural oils ensured hydration and protection. Karanja and carrot seed oil contributed to natural SPF, making it suitable for daily use.

CONCLUSION

The study concludes that herbal lip balm with natural SPF can be successfully formulated using plant-based ingredients. The product is safe, effective, and eco-friendly. It provides moisturization along with sun protection and can be a better alternative to synthetic lip balms.

REFERENCE

1. Terse P, Mane S, Patil T, et al. Natural Protection: The Benefits of Herbal Lip Balm for Healthier Lips. *Research Journal of Topical and Cosmetic Sciences*, 2025; 16(2): 111-116. DOI: 10.52711/2321-5844.2025.00018 Indian Journals
2. Lukman H, Shofia V, Latifah A, et al. SPF Determination of Carrot Extract-Based Sunscreen Lip Balm Using UV-Vis Spectrophotometry Method.

- Journal of Pharmacy and Science. 2025. Jurnal Universitas Abdurrahman.
3. Haresmita PP. Formulation and SPF Value Determination of Lip Balm with Pineapple Peel and Carrot Peel Extracts. *Jurnal Farmasi Lampung*, 2025. UTB Journals
4. Ayuningtyas N, Luthfiyanti N, Permata BR. Antioxidant Activity and SPF Value Determination of Sappan Wood Extract Lip Balm. *Jurnal Riset Rumpun Ilmu Kesehatan*, 2025.
5. Besan EJ, Setyowati E, Fadel MN, et al. Development of Beetroot Extract-Based Lip Balm: Physical Evaluation and SPF Potential. *Majalah Farmaseutik*, 2025.
6. Vikram, Shadab MD, Lakshmi CSR, Kavitha PN. Formulation and Evaluation of Herbal Lip Balm. *International Journal of Novel Research and Development*. 2023;8(9):d288-d297.
7. Visht S, Salih SS, Mohammed DA, et al. Formulation and Evaluation of Lip Balm Using Different Herbal Pigments. *Pharmacognosy Research*, 2024; 16(2): 367-375.
8. Purnima, A. & Kumar, P. (2018) Herbal lipsticks: An approach towards safe cosmetics. *International Journal of Pharmaceutical Sciences and Research*, 9(5): 1885-1891
9. Patel VM, Prajapati, B. G. & Patel, H. V (2013) Herbal cosmetics. A review: *International Journal of Pharmaceutical Research and Development*, 5(3): 59-66
10. Kokate, CK, Purohit, A. P. & Gokhale, 5 B (2017) *Pharmacognosy (50 ed) Pune Nirali Prakashan* 4 Sharma, R. A. & Kumar, V. (2017) Natural sunscreens: Their role in skin protection *International Journal of Green Pharmacy*, 11(1): 22-28.
11. Pandey, 5 & Meshya. N. (2011). Herbal lip balm formulation and evaluation, *Journal of Pharmaceutical Science and Bioscientific Research*, 1(1): 12-15.
12. Arora, R. & Sharma, P. (2020) Herbal formulations as natural sunscreens. A review *Journal of Pharmacognosy and Phytochemistry*, 9(5): 220-225.