

# Development and Assessment of Lip Balm Incorporating a Variety of Herbal Extracts

ROHIT SHIVCHARAN PATIL<sup>1</sup>, PRATIKSHA BHAIYYASAHEB PATIL<sup>2</sup>, JAGRUTI ISHWAR CHITTE<sup>3</sup>, KAVERI PRADIPRAO BORASE<sup>4</sup>, HARSHAL MANOHAR PATIL<sup>5</sup>, URVESH CHANDRAKANT PATIL<sup>6</sup>

<sup>1, 2, 3, 4, 5, 6</sup> *Indubai Bhadane College of Pharmacy Borkund*

**Abstract**— *Cosmeceuticals are cosmetic products that contain biologically active components designed to provide therapeutic or drug-like benefits. In this research, the design, quality, and formulation of a lip balm derived from natural ingredients were investigated. The lip balm was created using a variety of substances including beetroot, almond oil, aloe Vera, vitamin E, and rose essence. A uniform mixing technique was employed in the production process. To assess the lip balm, it was applied to a glass slide, and various parameters such as chemical stability, pH, melting point, and spreadability were evaluated. The lip balm exhibited a pH of 6.0 and a melting point between 63-65°C. Stability studies conducted at ambient temperature (25.0±3.0°C), refrigerated conditions (4.0±2.0°C), and oven temperature (40.0±2.0°C) demonstrated that the lip balm remained consistent in nature, applied smoothly, and maintained its integrity at both room temperature and refrigeration. Thus, the lip balm formulated from these natural ingredients appears to be a promising alternative for addressing various lip ailments.*

**Index Terms**- *Beetroot, Formulation, Lip balm, Lips, Natural ingredients.*

## I. INTRODUCTION

Due to the presence of hazardous synthetic excipients in various cosmetic products, there has been considerable public apprehension and growing concern regarding the utilization of organic and natural sources. This shift in consumer preference reflects an increasing awareness of the potential health risks associated with synthetic ingredients and a desire for safer, more environmentally friendly alternatives.

- (1) Lips do not have any oil glands; therefore, it is crucial to provide them with additional hydration and protection throughout the day to prevent dryness and maintain their health and suppleness.
- (2) Conventional lip balm often comprises petrolatum, artificial waxes, alumina, parabens, hydrogenated

oils, and synthetic fragrances and dyes, all of which are hazardous to health. This presents a noteworthy concern for health authorities and regulatory agencies, especially given that lip balm is frequently consumed by the user, either intentionally or unintentionally.

- (3) Cosmeceuticals are specialized substances with medicinal properties that enhance topical action and additionally provide protection against various degenerative skin conditions.
- (4) The ongoing investigation was conducted utilizing carefully selected ingredients recognized for their limited adverse effects, ensuring a safer formulation.
- (5) Products employed to safeguard lips rather than merely embellish them are commonly referred to as lip balms. They establish a cohesive, moisture-resistant layer of nourishing oily substances, typically devoid of any additional dye or artificial colorants.
- (6) Beeswax, a natural compound secreted by female bees, is commonly utilized in cosmetics, particularly in lip balm formulations. This substance is deeply moisturizing, assists in protecting the lips from harmful sun rays, and provides a pleasing scent. Furthermore, beeswax serves as a natural emulsifying agent. Scientific studies have also unveiled that beeswax contains trace quantities of natural antibacterial properties, further enhancing its beneficial qualities for skincare.



Fig no.1

(7) Vitamin E: A Natural Solution for Healthy Lips  
Vitamin E, a powerful antioxidant and natural conditioner, can help maintain the soft, youthful texture of your lips. Expand more It combats signs of aging by promoting cell turnover and regeneration expand more. This not only reduces the appearance of fine lines, but also brings new, healthier cells to the surface faster. For dry, chapped lips, vitamin E oil offers a soothing and protective solution. Its thick, oily consistency forms a barrier, preventing further irritation and promoting healing.

Additionally, the color of a product can indicate its quality and freshness. Consider this when choosing your lip care products. This revision removes repetition, clarifies the benefits of vitamin E, and adds a concluding sentence about product selection.

(8) Almond Oil: A Natural Remedy for Soft, Healthy Lips. Almond oil, known for its deep penetration into the skin, effectively moisturizes lips thanks to its rich fatty acids. This nourishing oil also boasts anti-inflammatory properties, which can reduce redness and soothe discomfort associated with chapped and sunburned lips. This revision eliminates the repetition and clarifies the benefits of almond oil for lip care.

(9) Aloe Vera: Nature's Soothing Balm for Lips  
Soothing and anti-inflammatory, aloe Vera gel offers a natural remedy for irritated lips. Its wealth of antioxidants goes beyond simply fighting wrinkles; they help combat various signs of skin damage, keeping lips healthy and youthful. This revision eliminates redundancy and clarifies the benefits of aloe vera for lips.



Fig no. 2



Fig no. 3

Beetroot: A Potential Antioxidant for Soft, Supple Lips

(10) Beetroot, rich in antioxidants, may contribute to softer, suppler lips and improved skin elasticity. These antioxidants could potentially help combat dryness and promote overall lip health.

Focusing on Lips: Thin Skin, Big Needs

Unlike facial skin, lips are much thinner, with only a few layers offering protection. This thinness makes them more susceptible to dryness, inflammation, and swelling. To maintain healthy lips, regular moisturizing with lip balm is crucial.

## II. MATERIAL AND METHOD

Ingredients:

- Beeswax (pure white) - Loba Chemical Pvt. Ltd.
- Almond Oil (Bajaj Almond Drops®)
- Aloe Vera Juice (organically extracted from Aloe barbadensis)
- Beetroot Juice (Beta vulgaris subsp. Vulgaris)
- Rose Powder (Marc Flavours)
- Glycerin (98% extra pure) - Loba Chemical Pvt. Ltd.
- Vitamin E (Capsule - Evion® 400)

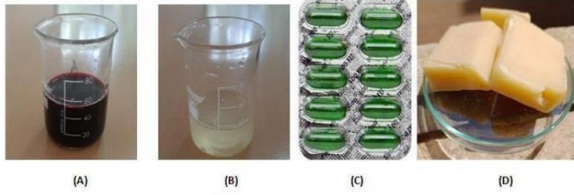


Figure 2:(A)-Beetroot Juice; (B)-Aloe vera Extract; (C) Cap. Evion® 400; (D)Bees Wax Pure White

Table no. (1) MATERIAL TABLE

Sr.	Material
1.	Beet Root
2.	Bees Wax
3.	Almond Oil
4.	Vitamin E
5.	Rose Water
6.	Glycerol

Table no. (3) EQUIPMENT

Sr.	Equipment's
1.	Autoclave
2.	Centrifuge
3.	Melting Point Apparatus
4.	Weighing Balance
5.	Ice bath
6.	Water Bath
7.	Beaker

Preparation of the ingredients:

(11) Aloe Vera Gel: Aloe Vera leaves were collected, washed thoroughly, and peeled to remove the thick epidermis. The inner gel was then carefully separated with a spoon, minced, and homogenized in a mixer.

Beetroot Extract: Washed beetroots were peeled, chopped, and blended well. The resulting mixture was then filtered through a clean muslin cloth to extract the juice.

Rose Water: A 2% rose water solution was prepared by dissolving 2 grams of rose powder (Marc Flavours) in 100 ml of distilled water.

### III. METHOD OF PREPARATION OF LIP BALM

- Precise Measurement:

(12) All ingredients were meticulously weighed using a digital balance with an accuracy of 0.1 gram.

- Melting the Beeswax: The crude beeswax was first grinded into a uniform consistency. Using indirect heat, the beeswax was melted in a 50 ml beaker at a maximum temperature of 90°C.
- Ingredient Combination: Once melted, all other ingredients (vitamin E, beetroot juice, rose essence, and almond oil) were thoroughly mixed and carefully added to the beeswax. The mixture was continuously stirred until a homogenous consistency was achieved.
- Molding and Cooling: Just before pouring the mixture into the lip balm molds, a thin layer of glycerin was applied to the insides using a cotton swab. The filled molds were then set aside in an ice bath for about an hour.
- Solidification and Storage: After cooling, the lip balm was left undisturbed for an additional hour in a cool, dry place, protected from direct sunlight, to allow complete solidification. For optimal stability and to ensure the product meets quality standards, it's recommended to wait 48 hours before using the lip balm after storing it at room temperature.

Table no. (3) COMPOSITION OF LIP BALM:

SR.NO	INGREDIENTS	QUANTITY	USES
1	Bees wax	12%	Impart Glossiness and hardness
2	Beetroot	11%	Coloring Agent
3	Almond oil	5%	Moisturizing agent
4	Aloe-Vera	4%	Antioxidant, anti-inflammatory
5	Vitamin -E	1.5%	Antioxidant, maintain the stability
6	Rose water	2%	Flavoring agent

Evaluation Of Lip balm:

- Melting Point:

(13) This test determines the safe storage temperature for the lip balm.

- A capillary tube method was used: The lip balm was filled into a sealed capillary tube attached to a thermometer. The apparatus was heated, and the temperature at which the lip balm melted was recorded. The test was repeated three times, and the average temperature was considered the melting point.
- The acceptable range for the lip balm's melting point is typically between 66°C and 68°C.

1. Organoleptic Properties:

- This evaluation focuses on the lip balm's basic sensory characteristics:
- Color o Odor o Taste o Appearance

2. Spread ability Test:

- This test assesses how easily the lip balm spreads when applied.
- The lip balm is applied at room temperature onto a glass slide.
- An analyst observes the uniformity of the layer formed and checks for any fragmentation, deformation, or breakage of the stick during application.
- A rating system is used to grade the spread ability:

Good (G): Uniform layer, perfect application, no fragmentation, and no deformation.

Intermediate (I): Uniform layer, minor fragmentation, acceptable application, slight deformation.

Bad (B): Uneven layer, significant fragmentation, difficult application, and severe deformation.

3. Surface Anomalies:

- This test inspects the lip balm surface for any defects like:
- Crystal formation o Mold or fungal contamination

4. Aging Stability:

- This test evaluates how well the lip balm maintains its quality over time.
- The lip balm is stored at 40°C for one hour.

- Afterward, it's observed for signs of: o Bleeding
- Crystallization on the surface
- Difficulty in application

5. Solubility Test:

- This test determines the solvents (like ethanol or chloroform) in which the lip balm can dissolve.

6. pH Level:

- This test measures the lip balm's acidity or alkalinity, which can affect its potential to irritate the lips.
- An ideal pH is close to neutral.
- To measure the pH:
- gram of the lip balm is dissolved in 100 ml of water. A pH meter is used to obtain the reading.

7. Skin Irritation Test:

(14) This test assesses the potential for skin irritation caused by the lip balm. A small amount is applied to the back of the subject's left hand for a specific period (details omitted for brevity).The same rating system used in the spreadability test (Good, Intermediate, Bad) is used to evaluate the irritation level.

8. Stability Studies:

- The lip balm undergoes further stability testing under various conditions for 30 days:
- Room temperature (25°C ± 3°C) o Refrigeration (4°C ± 2°C) o Oven temperature (40°C ± 2°C)
- After 30 days, the lip balm is re-evaluated for:
- Organoleptic properties o Melting point o Spreadability o pH

Table no. (4) Evaluation Of Lip Balm

SR.NO	EVALUATION PARAMETER	OBSERVED VALUE
1.	Melting point	63°C -65°C
2.	Organoleptic properties	-
2.1	Colour	White
2.2	Odour	Pleasant
2.3	appearance	Smooth
3.	Test of spread ability	-
4.	pH measurement	6.0

5.	Skin irritation	No
6.	Breaking point	29gm

### CONCLUSION

This study demonstrates the safety and efficacy of the natural ingredient lip balm formulation. This combination of ingredients appears to be superior for lip balm development. Further research could explore modifications to the inactive ingredients (excipients) or explore new ingredient combinations to potentially create even better formulations with enhanced properties. Based on these results, the current lip balm formulation is predicted to have a good shelf life.

### REFERENCES

- [1] Christopulos A, Mouth anatomy <https://emedicine.medscape.com/article/1899122-overview> Sep 11, 2018
- [2] B.H. Ali, N.A. Wabel, G. Blunden, Phytochemical, pharmacological and toxicological aspects of *Hibiscus sabdariffa* L.: a review. *Phytother Res.* 19 (2005) 369-375
- [3] M.S. Balsam, E. Sagarin, *Cosmetics science and technology*, Second ed. Wiley Interscience Publication, NY, USA, 2008, 3, pp. 209-512.
- [4] Fernandes AR, Dario MF, Stability evaluation of organic lip balm. *Brazilian Journal of Pharmaceutical Sciences*, 2013; 49; 293-300.
- [5] Kadu M, Singh V. Review on natural lip balm *International Journal of Research in Cosmetic Science* 2015; (1): 1-7.
- [6] Mayuri Kadu, Dr Suruchi Vishwasrao, and Dr Sonia Singh, A Review on Natural
- [7] Lip Balm. *International Journal of Research in Cosmetic Science*. 03 August 2014. ISSN 2277–7172.
- [8] A.R. Fernandes, M.F. Dario, C.A.S.O. Pinto, T.M. Kaneko, A.R. Baby, M.V.R. Velasco, Stability evaluation of organic Lip Balm, *Braz. J. Pharm. Sci.* 2 (2013) 49.
- [9] Savalkar M.B. et al. Formulation & Evaluation of Herbal lipstick using *Amaranthus dubius*, *J. Pharm. Res.*, 2018, 7(6), 96-98.
- [10] P. L. Kole, H. R. Jadhav, P. Thakurdesai, A. N. Nagappa, Cosmetic products of herbal extracts, *Natural Product Radiance*. 4 (2005) 4.
- [11] Grindlay D, Reynolds T. The Aloe vera phenomenon: A review of the properties and modern uses of the leaf parenchyma gel. *J Ethnopharmacol.* 1986; 16:117– 51
- [12] Abdul Wadood Khan, Sabna Kotta, Shahid Hussain Ansari, Rakesh Kumar Sharma, Amit Kumar and Javed Ali, Formulation development, optimization and evaluation of aloe vera gel for wound healing. *Pharmacognosy Mag.* 2013 OctDec; 9(Supply 1): S6–S10. doi: 10.4103/0973-1296.117849
- [13] Mona Patel, Ojash Patel, formulation and evaluation of herbal lipstick using beta vulgaris extract. *International ayurvedic medical journal.* June 2021.
- [14] S. Deshmukh, M. Chavan, M. Sutar, S. Singh, Preparation and evaluation of natural lipsticks from *bixa orellana* seeds, *Int J Pharm Bio Sci.* 4 (2013) 139-144.
- [15] GOUVEA, M.C.B.L.F. Desenvolvimento de base de batons. *Cosmet. Toiletries (Portuguese edition)*, v.5, n.2, p.49-56, 1993.