



iJRASET

International Journal For Research in
Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 14 Issue: VII Month of publication: July 2026

DOI: <https://doi.org/10.22214/ijraset.2026.84250>

www.ijraset.com

Call:  08813907089

E-mail ID: ijraset@gmail.com

Formulation and Evaluation of Herbal Lip Balm Containing Saffron Extract

Lalwani Kulbhushan Mahavir¹, Kardile Vaishnavi Chhagan², Kolhe Vandana Popat³, Sagade Pallavi Dnyandeo⁴
Shri Amolak Jain Vidya Prasarak Mandals R.M. D college of Pharmacy Kada India

Abstract: *Background-Lip balms are widely used to protect and moisturize lips, especially in harsh environmental conditions with increasing consumer preferences for natural products, there is a growing demand for lip balms formulated using natural ingredients. The formulation exhibited a smooth texture, uniform appearance, pleasant odour, acceptable pH, good spreadability, and satisfactory stability under storage conditions. No signs of irritation or phase separation were observed during the evaluation. The results indicate that the developed herbal lip balm is stable, safe, and suitable for regular lip care. The study suggests that saffron extract can be effectively incorporated into herbal lip balm formulations as a natural ingredient with potential cosmetic benefits.*

Keywords: Saffron Extract, Natural lipbalm formulation sunflower oil

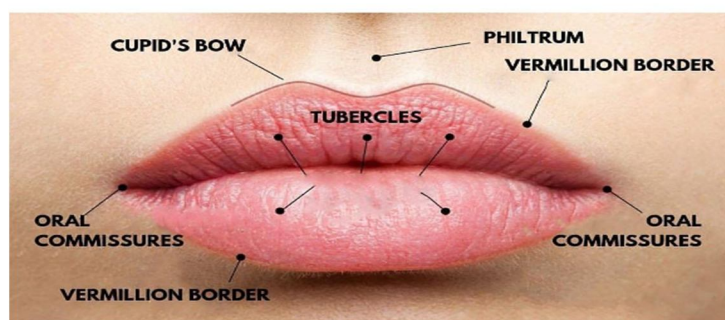
I. INTRODUCTION

Cosmetics play an important role in today's lifestyle. Furthermore, the current trend is to go green in most industries, including cosmetics, towards a more natural lifestyle. Better options are natural foods, herbal medicines and natural cures for healthy living. There is also strong demand for organic plant products. The use of herbal cosmetics has been increased many times in the personal care system. Natural products have been used for traditional medicinal purposes around the world for thousands of years. Many of them have pharmacological properties such as antibacterial, anti-inflammatory and cytostatic effects. They have been recognized as useful for human medicine

In addition to formulation, the evaluation of lip balms is crucial to ensure their effectiveness and consumer safety. Parameters such as moisturization efficacy, spreadability, pH balance, and stability under different environmental conditions are assessed to optimize product performance. With the rising demand for multifunctional and sustainable lip care products, continuous research and innovation in lip balm formulation and evaluation are essential to meet consumer needs

A. Lip Anatomy

It is made up of the mucous membrane, areolar tissue, orbicularis muscle, superficial fascia, and skin. Dry, red mucous membrane that is continuous with the skin and has many touch corpuscles and vascular papillae covering the lip edges. (Figure 1)



ANATOMY OF THE LIPS

B. Vermilion Border

Latin terms labium superius oris and labium inferius oris refer to the anatomical names for the upper and lower lip, respectively.³ The lower lip includes the area between the lateral commissures and the Labiomental crease of the chin, although considerations of the lips are typically focused on the vermilion zone. The upper lip extends from the nasolabial folds to the inferior border of the nose

C. Tuberculosis

The tubercle or procheilon is the underlying fleshy fullness of the philtrum, which forms the downward arch of the cupid's bow.

D. Oral Commissures

The commissure is the point where the upper and lower lips meet at the mouth angle. Several muscles used in lip movement attach at this location.

E. Philtrum

A symmetrical pair of paramedian vertical philtral ridges that surround the philtrum, a central depression, are features of the upper lip. Dermal collagen and elastic tissue combine to generate a special collection that forms the philtrum and philtral ridges. It is thought that the philtrum provides extra skin that can be

II. HISTORICAL BACKGROUND

Lip care has ancient roots, with historical records showing that natural ingredients like beeswax, plant oils, and animal fats were used to protect and soften the lips. Over time, commercial lip balm products were introduced, starting with the invention of lipstick in the late 19th century. Modern lip balms have diversified to include a range of ingredients aimed at moisturizing, healing, and providing protection from environmental factors such as UV radiation.

III. OBJECTIVES OF THE STUDY

To develop a standardized method for preparing Lip balm

- 1) To evaluate the phytochemical content of the prepared lip balm
- 2) To assess the physical properties of the Lip balm, such as particle size, moisture content, and colour.
- 3) To explore the potential pharmaceutical applications of Lip balm

A. Advantage of Lip Balm

- 1) Healing and Moisturizing: Ingredients like coconut oil and almond oil not only hydrate but also have healing properties, helping to repair damaged lips and maintain long-lasting moisture.
- 2) Skin Protection: These oils lock in moisture and provide a protective layer, preventing dehydration and keeping lips soft and smooth throughout the day.
- 3) Gentle on Sensitive Skin: Free from synthetic additives and chemicals, natural lip balms are less likely to cause irritation or allergic reactions, making them suitable for all skin types, including sensitive or allergy-prone lips.
- 4) Versatile and Customizable : Natural lip balms can be infused with subtle flavors or natural tints, allowing for a personalized touch while maintaining the purity and effectiveness of the ingredient

B. Disadvantages of natural Lip balm

- 1) Low- quality lip balms can cause serious harm to the lips, drying them out instead of moisturizing them.
- 2) The naturally derived colour and Flavour are more difficult to obtain and have stability issues in the product

IV. MATERIALS AND METHODS

- 1) Dried saffron (*Crocus sativus* L.) was procured from a reliable source. A 2 mL saffron extract was prepared and used as the active ingredient.
- 2) 3.5 mL of sunflower oil was taken in a clean china dish, and 2 mL of saffron extract was added. The mixture was heated gently with occasional stirring to facilitate the extraction and uniform dispersion of the saffron constituents into the oil.
- 3) In another china dish, 1.5 g of beeswax, 1.5 g of cocoa butter, and 1.5 g of lanolin were accurately weighed and melted together using the double-boiling method at approximately 70°C until a clear, homogeneous melt was obtained.
- 4) The saffron extract-sunflower oil mixture was slowly added to the molten wax base with continuous stirring.
- 5) Food-grade flavour oil (Q S.) was added, and the mixture was stirred continuously until a smooth and uniform consistency was obtained.
- 6) The molten lip balm was immediately poured into clean, dry lip balm containers.
- 7) The containers were allowed to cool at room temperature and then refrigerated for complete solidification.

- 8) The prepared herbal lip balm was stored in airtight containers and evaluated for various physicochemical parameters such as appearance, colour, pH, spreadability, melting point, stability, and skin irritation.

Table 1

S. No	Ingredients	Formula	Uses
1	Saffron Extract	2 ml	Colouring agent
2	Sunflower oil	3.5ml	Moisturizing agent
3	Cocoa Butter	1.5 g	Emollient
4	Lanolin	1.5 g	Lubricant
5	Beeswax	1.5 g	Natural Preservative
6	Food -grade flavour oil	Q.S	Flavouring agent

V. EVALUATION PARAMETERS

The prepared herbal lip balm formulations were evaluated for their physicochemical properties, stability, and performance using the following parameters.

- 1) Organoleptic Evaluation: The formulations were visually examined for colour, appearance, odour, texture, and homogeneity.
- 2) pH Determination: One gram of lip balm was dispersed in 100 mL of distilled water. The pH of the dispersion was measured using a calibrated digital pH meter at room temperature.
- 3) Melting Point: The melting point of the lip balm was determined using the capillary tube method. The temperature at which the formulation started melting was recorded.
- 4) Spreadability: Spreadability was determined by placing a small quantity of lip balm between two glass slides. A standard weight was applied, and the ease of spreading was evaluated.
- 5) Hardness: The hardness of the formulation was evaluated by applying pressure to determine its resistance to deformation during normal use.
- 6) Homogeneity: The prepared formulation was visually inspected for uniformity, absence of lumps, and smooth consistency.
- 7) Washability: The ease of removal of the lip balm from the skin with water was evaluated manually.
- 8) Stability Study: The formulations were stored at room temperature and under accelerated conditions for the specified study period. They were periodically examined for changes in color, odour, texture, consistency, and phase separation.
- 9) Skin Irritation Test: The formulation was applied to a small area of healthy skin and observed for 24 hours for any signs of redness, itching, irritation, or allergic reaction.
- 10) Moisturizing Property: The moisturizing effect was assessed by regular application on dry lips and observing improvement in softness, smoothness, and hydration.
- 11) Antioxidant Activity (Optional): The antioxidant activity of the saffron-containing formulation may be determined using the DPPH free radical scavenging assay and compared with a suitable standard antioxidant.

VI. RESULTS AND DISCUSSION

The prepared herbal lip balm containing saffron extract showed satisfactory physicochemical characteristics. The formulation exhibited a smooth texture, uniform appearance, pleasant aroma, and good spreadability without any signs of grittiness or phase separation.

The pH of the formulation was found to be within the acceptable range for topical application, indicating that it is unlikely to cause irritation to the lips. The melting point was appropriate, ensuring adequate stability at room temperature while allowing easy application.

The lip balm demonstrated good Spreadability consistency, providing a uniform protective layer on the lips. Washability and homogeneity were satisfactory, confirming the uniform distribution of all ingredients. Stability studies revealed that the formulation remained stable without significant changes in colour, odour, texture, or consistency during the storage period.

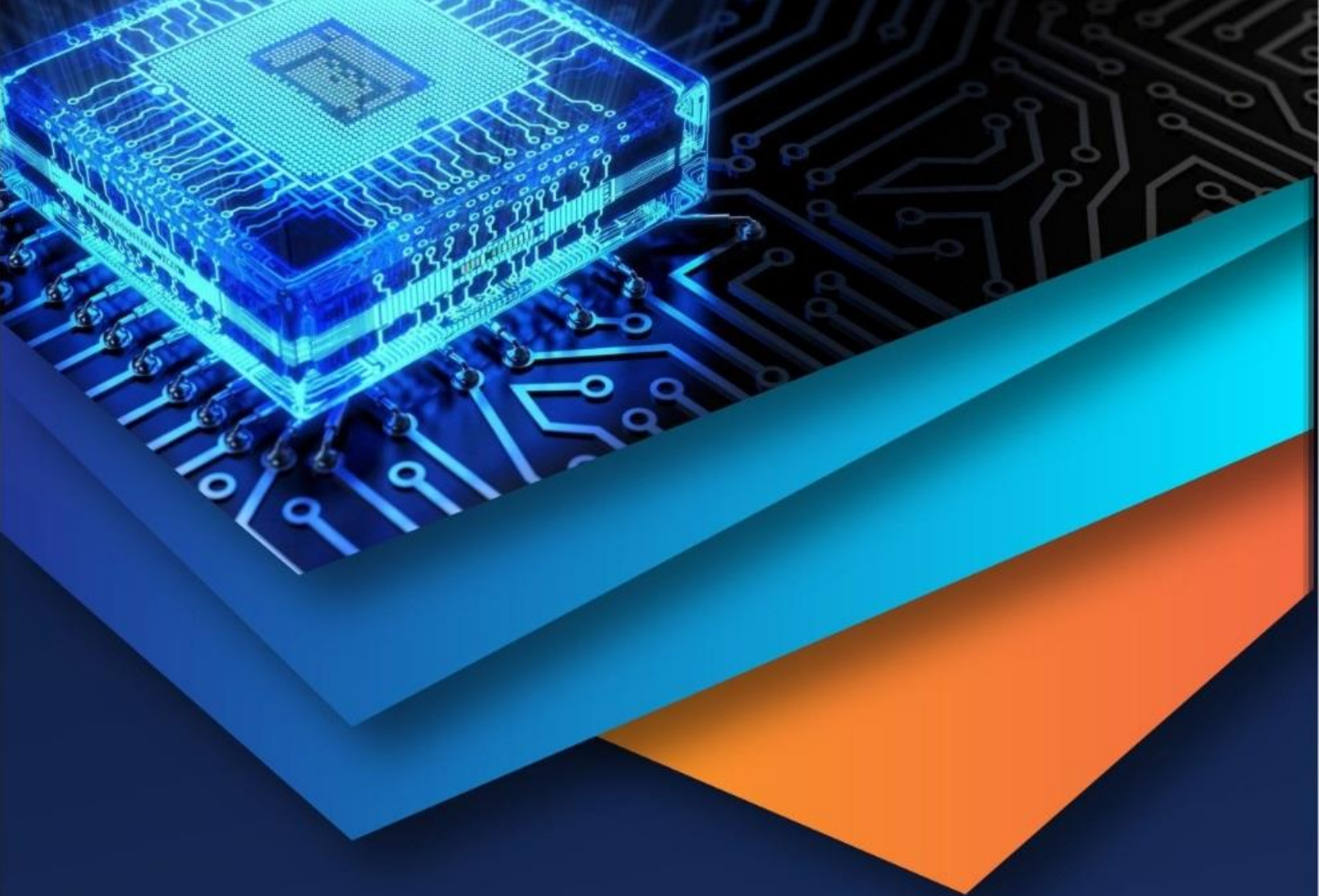
The natural saffron extract imparted an attractive colour to the formulation while also contributing antioxidant and moisturizing properties. Overall, the developed herbal lip balm fulfilled the desired quality parameters and may serve as a safe and effective natural lip care formulation.

VII. CONCLUSION

The present study successfully developed and evaluated a herbal lip balm containing *Crocus sativus* (saffron) extract. The formulation exhibited satisfactory physicochemical characteristics, including good appearance, smooth texture, acceptable pH, appropriate melting point, good spreadability, and excellent homogeneity. The lip balm also demonstrated satisfactory stability without any noticeable changes during the study period. The presence of saffron extract may contribute antioxidant and moisturizing properties, making the formulation suitable for the protection and nourishment of dry and chapped lips. Overall, the developed herbal lip balm can be considered a promising natural cosmetic formulation. Further studies, including long-term stability testing and clinical evaluation, are recommended to confirm its safety and efficacy.

REFERENCES

- [1] V.P. Kapoor. Herbal cosmetics for skin and hair care. Natural Product Radiance, 2005, vol. 4, pp. 306-314.
- [2] P.K. Chattopadhyay. Herbal cosmetic and ayurvedic medicines. National Institute of Industrial Research, 2005, vol. 1, pp. 45-50.
- [3] Magesh Jain, Shweta Shriwas, Sumeet Dwivedi, Raghvendra Dubey. Design, Development and Characterization of Herbal Lipstick Containing Natural Ingredients. American Journal of Life Science Researches, 2017, 5.2, pp. 36-39.
- [4] <https://uebt.org/resource-pages/deep-dive-on-beauty-and-biodiversity>
- [5] Kadu M, Vishwasrao S, Singh S. Review on natural lip balm. International Journal of Research in Cosmetic Science. 2015;5(1):1-7.
- [6] AmaleSS, KambleRR, WamaneVB. RodeARAResearchOnHerbal Lip Balm. Tijer International Research Journal. 2023;10(5):142-160
- [7] P.P. Sharma. Cosmetics- Formulation, manufacturing and quality control (4th ed.). Vandana Publications Pvt. Ltd., India, 2008.
- [8] 2. 3. 4. 5. 6. 7. 8. 9. V.P. Kapoor. Herbal cosmetics for skin and hair care. Natural Product Radiance, 2005, vol. 4, pp. 306-314.
- [9] P.K. Chattopadhyay. Herbal cosmetic and ayurvedic medicines. National Institute of Industrial Research, 2005, vol. 1, pp. 45-50
- [10] V.P. Kapoor, Herbal cosmetics for skin and hair care, Natural Product Radiance. 4 (2005) 306-314.



10.22214/IJRASET



45.98



IMPACT FACTOR:
7.129



IMPACT FACTOR:
7.429



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089  (24*7 Support on Whatsapp)