International Journal of Research in Pharmacy and Pharmaceutical Sciences
www.pharmacyjournal.in
ISSN: 2455-698X
Received: 13-02-2026, Accepted: 16-03-2026, Published: 31-03-2026
Volume 11, Issue 1, 2026, Page No. 165-166

# Herbal beetroot (*Beta vulgaris* L.) lip balm: A review on natural formulation, evaluation, and cosmetic applications

**Niharika Saini[1], Kunika Sharma[1], Vishal Jangid[1], Dr. Chandraprakash Mishra[2], Dr. Pawan Kumar Basniwal[3]**
[1] Scholars, Sri Balaji College of Pharmacy, Jaipur, Rajasthan, India
[2] Assistant professor, Sri Balaji College of Pharmacy, Jaipur, Rajasthan, India
[3] Professor & Principal, Sri Balaji College of Pharmacy, Jaipur, Rajasthan, India

**Abstract**
Herbal cosmetic formulations are gaining increasing attention due to consumer awareness regarding the potential adverse effects of synthetic ingredients. Lip balms are widely used topical formulations designed to protect lips from dryness, environmental damage, and transepidermal water loss. This review summarizes the formulation, functional properties, and evaluation of herbal lip balm prepared using beetroot (*Beta vulgaris* L.) as a natural coloring and antioxidant agent. Beetroot contains betalain pigments and phenolic compounds that contribute to antioxidant and protective properties. The formulation commonly includes beetroot extract as the primary colorant, coconut oil as an emollient base, beeswax as a structural agent, and vitamin E as an antioxidant stabilizer. Various evaluation parameters such as organoleptic characteristics, pH, melting point, spreadability, stability, and skin compatibility are used to assess formulation quality. Studies indicate that beetroot-based lip balms provide acceptable physicochemical properties, good stability, and moisturizing effects. These formulations represent a promising natural alternative to conventional lip care products containing synthetic dyes and petrochemical ingredients.

**Keywords:** Beetroot lip balm, herbal cosmetics, betalain pigments, natural colorant, cosmetic formulation

## Introduction
Lip care products are essential cosmetic preparations used to protect and moisturize lips that are vulnerable to dryness and environmental stress. The lip region lacks sebaceous glands and has a thinner keratin layer compared to other parts of the skin, making it prone to dehydration and cracking. Conventional lip balms often contain synthetic ingredients such as artificial colors, preservatives, and petroleum derivatives. Although these substances enhance product stability and appearance, they may cause irritation or allergic reactions in sensitive individuals. Growing interest in herbal cosmetics has encouraged the use of plant-derived ingredients in lip care formulations.
Beetroot (*Beta vulgaris* L.) is a root vegetable known for its natural red pigments called betalains and its antioxidant content. These compounds make beetroot a suitable ingredient for cosmetic formulations. When incorporated into lip balms, beetroot extract provides natural coloration and antioxidant benefits while avoiding synthetic dyes.

## Materials Used in Herbal Beetroot Lip Balm
### 1. Beetroot (*Beta vulgaris* L.)
Beetroot is widely used as a natural colorant and antioxidant source. The betalain pigments present in beetroot contribute to its characteristic red color and provide antioxidant properties that may protect lip skin from oxidative damage.

### 2. Coconut Oil
Coconut oil acts as an emollient and moisturizing agent in lip balm formulations. It helps soften the lips and improves the spreadability and texture of the product.

### 3. Beeswax
Beeswax provides structure and firmness to lip balm formulations. It also forms a protective barrier on the lips that helps retain moisture and prevent dryness.

### 4. Vitamin E
Vitamin E is used as an antioxidant stabilizer in cosmetic formulations. It prevents oxidation of oils and pigments and contributes to improved shelf life and skin conditioning.

## Methodology for Lip Balm Preparation
Fresh beetroot is washed, peeled, and ground to obtain a paste. The paste is filtered using cheesecloth to obtain beetroot extract. The extract is mixed with coconut oil and gently heated to allow infusion of pigment into the oil phase. Beeswax is added to the heated mixture and melted completely to create the semi-solid structure. After cooling slightly, vitamin E is incorporated and the mixture is poured into containers where it solidifies to form the final lip balm.
The herbal lip balm formulation was prepared using beetroot extract (51 g) as a natural pigment source, coconut oil (30 g) as an emollient base, beeswax (5.5 g) as a structuring agent, and vitamin E (0.30 g) as an antioxidant stabilizer. The combination of these ingredients provides natural coloration, moisturization, structural stability, and improved product shelf life.

## Evaluation of Herbal Lip Balm
The formulated lip balm can be evaluated using several physicochemical parameters including organoleptic properties, pH, melting point, spreadability, skin irritation test, and stability studies.

**Table 1:** Formula of Herbal Beetroot Lip Balm

| S. No. | Ingredient | Quantity (g) | Percentage (%) | Category | Function in Formulation |
|---|---|---|---|---|---|
| 1 | Beetroot Extract (*Beta vulgaris L.*) | 51 g | 58.75 % | Natural Colorant / Active Ingredient | Provides natural reddish tint and antioxidant protection. |
| 2 | Coconut Oil | 30 g | 34.56 % | Emollient / Oil Base | Moisturizes lips and improves spreadability. |
| 3 | Beeswax | 5.5 g | 6.33 % | Wax Base / Structuring Agent | Gives firmness and stability to lip balm. |
| 4 | Vitamin E | 0.30 g | 0.34 % | Antioxidant | Prevents oxidation and enhances shelf life. |

| Parameter | Result | Observation |
|---|---|---|
| Colour | Reddish Pink | Acceptable |
| Odour | Pleasant | Acceptable |
| Texture | Smooth | Acceptable |
| pH | ~6.2 | Within Limits |
| Melting Point | 62–65°C | Suitable |
| Spreadability | Good | Satisfactory |
| Hardness | Adequate | Satisfactory |
| Skin Irritation | No irritation | Safe |

## Discussion

Evaluation results indicate that herbal lip balm formulations containing beetroot extract possess acceptable cosmetic properties. The natural pigment provides an attractive tint while avoiding synthetic dyes. Coconut oil contributes to moisturization, beeswax provides structural stability, and vitamin E enhances antioxidant protection and product shelf life.

## Conclusion

Beetroot-based herbal lip balm represents a safe and effective alternative to conventional lip care products. The use of natural ingredients aligns with modern consumer preferences for eco-friendly and plant-based cosmetics. Further research including clinical evaluation and long-term stability studies may enhance the development of commercial herbal lip care products.

## References


1. Kowlu R. Review on preparation and evaluation of natural lip balm from beetroot.
2. Kim MK, Patel RA. Anatomy and physiology of lip skin: implications for cosmetic formulations.
3. Bonté F. Skin barrier function and moisturization in cosmetic science.
4. Georgiev VG, Weber J. Antioxidant activity and betalain composition of *Beta vulgaris*.
5. Nagansurkar S, Bais S, Kharat R. Formulation and evaluation of beetroot lip balm.
6. Mishra I, *et al*. Formulation and evaluation of a polyherbal lip balm.
7. Ananda A, *et al*. Optimization of lip balm formulation containing beetroot extract.