

A Review on Lip Balm: Method of Preparation, Quality Evaluation, and Formulation Challenges

S.M. Shahidulla¹, M. Suresh Babu², Mariyam Fathima*¹, Rumaisa Afsheen², Akifa Mustafa Hussain³, Adeeba Mahveen⁴, Ramsha Fatima⁵

Department of pharmaceuticals, Deccan school of pharmacy, Hyderabad-01

Date of Submission: 02-05-2026

Date of Acceptance: 11-05-2026

ABSTRACT: Lipbalm is a cosmetic product applied to the lips to add colour and improve their appearance. It is widely used to enhance beauty, make the face look more attractive, and protect the lips from damage caused by dryness, sunlight, and UV rays. Herbal lipbalm is a cosmetic preparation made from natural ingredients such as pigments, oils, fragrances, preservatives, and colours. It gives the lips shine, smoothness, moisture, and an appealing texture. Lip balm have become a common item in women's handbags and are available in many shades and forms, including liquid and stick varieties. Herbal lip balm are becoming more popular because they are safer and cause fewer side effects than synthetic products. They contain natural nutrients that help maintain healthy, soft, and moisturized lips. In contrast, regular lip balm may contain artificial colorants and chemicals that can be harmful to the skin. Continuous use of these synthetic products may cause problems such as skin irritation, discoloration, allergies, and even serious conditions like lip cancer.

KEYWORDS: Natural, Herbal, Colour, Ingredients, Side effect, Herbal lip balm, Evaluation.

I. INTRODUCTION:

Cosmetics are products intended to be sprayed, poured, rubbed, sprinkled, or applied to any part of the body for cleansing, beautifying, enhancing attractiveness, or changing appearance. They are substances used to improve the appearance or fragrance of the human body. Among all cosmetic products, lip balm is one of the most commonly used items in personal care to enhance the beauty and health of the lips. A high-quality lip balm should possess desirable features and be acceptable to consumers, such as a smooth texture, moisturizing effect, and antioxidant properties. Lip balm is formulated using different ingredients including bases, oils, emollients, and colorants, all of which influence its final properties. Important characteristics such as texture, melting point, and

hardness can be adjusted by changing the proportion of ingredients used in the formulation.^{1,2}

Colorants or pigments are essential components in tinted lip balm because they determine its visual appeal and aesthetic value. These colorants may come from either synthetic or natural sources. Synthetic colours are chemically produced and may be harmful when consumed or used continuously. They can cause side effects such as allergies, dermatitis, skin discoloration, dryness of the lips, and in some cases may even be carcinogenic or dangerous to health. Due to these concerns, the use of natural colorants in lip balm production has increased. Natural colours are obtained from sources such as plants, insects, and algae, making them a safer and more eco-friendly alternative. The word cosmetic is derived from the Greek word *kosmetikos*, which means the power, skill, or art of decorating and arranging. Herbal cosmetics are products in which one or more herbal ingredients are used in the formulation base. These products contain phytochemicals, which are natural substances present in plants. Phytochemicals help improve skin functions and provide essential nutrients required for healthy, glowing skin and hair.³

Ideal Characteristics:

- It should produce a soft, glossy finish without any sweating.
- It must be safe for use and should not cause irritation or toxicity to the lips.
- It should retain its quality and should not dry out during storage.
- The packaging should function smoothly and be user-friendly.
- It should spread evenly and deliver a consistent colour on application.
- It should have a smooth texture without any coarse or gritty particles.
- It should remain stable, without melting or becoming excessively hard under normal temperature variations.⁴

Benefits of Herbal Lip Balm Compared to Synthetic Lip Balms:

- Herbal lip balms are prepared using plant-based and naturally sourced ingredients, making them safer for daily application.
- They provide essential nutrients that moisturize, protect, and improve the overall condition of the lips.
- The risk of irritation or adverse reactions is generally lower than with synthetic formulations.
- These balms often exhibit beneficial properties such as being non-toxic, antioxidant-rich, antimicrobial, anti-inflammatory, and soothing for damaged or discoloured lips.
- A broad selection of natural shades is available, giving consumers many colour choices.
- Naturally obtained pigments can produce attractive hues including red, purple, pink, orange, violet, and magenta tones.
- Different shades can be mixed creatively to obtain customized colours.
- The intensity and tone of the colours may also be altered through the use of suitable natural or mineral acidic and alkaline agents.^{5,6}

Anatomy of the Lips:

The lips are soft, flexible structures that surround the opening of the mouth and play an essential role in eating, speaking, and facial expressions. They are divided into two parts: the upper lip (*labium superius oris*) and the lower lip (*labium inferius oris*). The area where the lips meet the surrounding facial skin is known as the vermilion border, which outlines the coloured portion of the lips. The reddish visible part enclosed by this border is called the vermilion zone. The curved central outline of the upper lip is commonly

referred to as the Cupid's bow. At the centre of the upper lip, there is a small rounded prominence known as the labial tubercle, also called the procheilon or tuberculum labii superioris. The outer skin covering the lips is much thinner than the skin on most parts of the face. Lip skin generally consists of only three to five cellular layers, whereas facial skin may contain up to sixteen layers. Due to this thinness, the blood vessels beneath the surface are more visible, giving the lips their characteristic pink or red appearance, especially in individuals with lighter skin tones. In darker skin tones, the lips may appear deeper in colour because they contain a higher amount of melanin, the natural pigment responsible for skin colour. The lips form a transitional boundary between the external facial skin and the moist mucous membrane lining the inside of the mouth.⁷

The upper lip lies in front of the maxilla, or upper jaw bone, and forms the upper boundary of the mouth opening. Its upper portion has the same appearance and colour as the surrounding facial skin. In the middle of this area, just below the nasal septum, there is a vertical groove called the philtrum, a term derived from Latin meaning "lower nose." The lower portion of the upper lip is distinctly red or pink in colour and resembles the inner lining of the mouth. This coloured area is known as the vermilion, a term used for the pigmented region of both the upper and lower lips. The characteristic shape and position of the upper lip are influenced by the levator labii superioris muscle, which helps elevate it during facial movement and expression. The upper and lower lips are internally joined by a thin fold of tissue known as the labial frenulum, which becomes visible when the mouth is opened widely. Certain changes in lip anatomy, such as a thin upper vermilion border and a flattened philtrum, are recognized facial features associated with Fetal Alcohol Syndrome (FAS), a permanent developmental condition resulting from alcohol exposure during pregnancy.^{8,9}

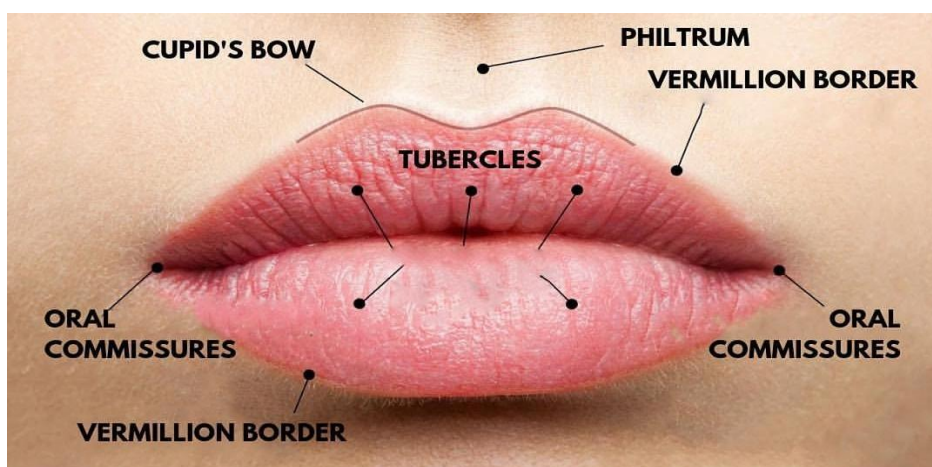


Figure 1: Anatomy of lips

Method of Preparation:

Step 1: Preparation of Herbal Extract:

Fresh or dried herbs are cleaned and shade dried. The herbs are powdered and extracted using suitable solvents such as water, ethanol, or oil infusion. The extract is filtered and concentrated.

Step 2: Melting of Base Ingredients:

Beeswax, shea butter, and cocoa butter are taken in a clean beaker and melted using a water bath at 65–75°C.

Step 3: Addition of Oils:

After complete melting, carrier oils such as coconut oil, almond oil, or olive oil are added slowly with continuous stirring.

Step 4: Incorporation of Herbal Extract:

The prepared herbal extract is added gradually into the molten base while stirring continuously to ensure uniform mixing.

Step 5: Addition of Flavour and Antioxidant:

Vitamin E and essential oils are added when the temperature falls below 45°C to prevent volatilization and degradation.¹⁰

Step 6: Homogenization:

The mixture is stirred continuously until a smooth and lump-free semisolid mass is obtained.

Step 7: Pouring into Containers:

The warm liquid mass is poured into sterilized lip balm tubes, jars, or containers.

Step 8: Cooling and Solidification:

Containers are kept undisturbed at room temperature or refrigerated for faster solidification.

Step 9: Packaging and Storage:

The prepared lip balm is capped, labelled, and stored in a cool, dry place away from direct sunlight.¹¹

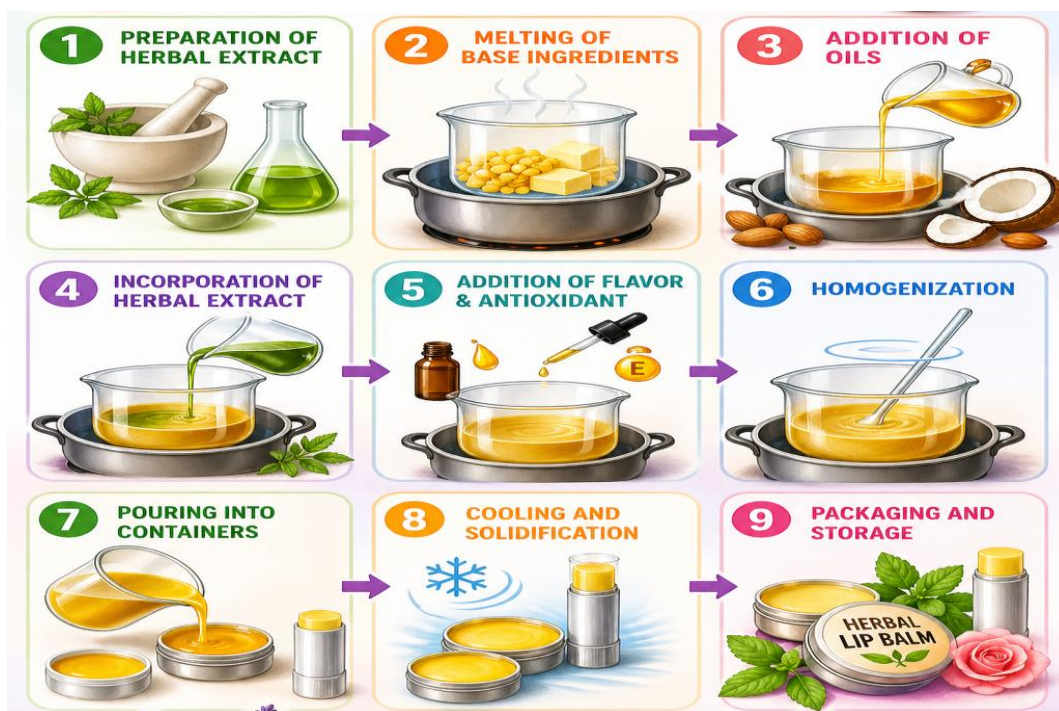


Figure 2: Herbal Lip Balm

Formulation-Related Problems in Lip Balm

1. Soft or Melting Texture:

- Caused by low wax content or high temperature exposure.
- Lip balm may become too soft or melt easily.

2. Hard Texture:

- Excess wax or insufficient oils/butters can make the product too hard.
- Difficult to apply smoothly on lips.

3. Grainy Appearance:

- Improper cooling or crystallization of butters (such as shea or cocoa butter).
- Results in rough texture.

4. Oil Separation:

- Poor mixing or incompatible ingredients may cause oils to separate from the base.

5. Sweating:

- Small droplets of oil appear on the surface due to temperature fluctuations.¹²

6. Uneven Colour Distribution:

- Inadequate blending of pigments or herbal extracts can cause patchy colour.

7. Rancidity:

- Oxidation of oils and fats leads to unpleasant odour and reduced shelf life.

8. Poor Spreadability:

- Incorrect ratio of waxes to oils causes dragging during application.

9. Low Stability:

- Product may change colour, odour, or texture during storage.

10. Microbial Contamination:

- Possible when water-based herbal extracts are used without proper preservatives.

11. Allergic Reactions or Irritation:

- Some essential oils, flavours, or herbal ingredients may irritate sensitive lips.¹³



Figure 3: Formulation related problem

Evaluation of Lip balm:

1.Appearance:

The lip balm should have an attractive and uniform appearance. It is examined for colour, gloss, clarity, smooth surface, and absence of cracks, air bubbles, or surface defects. A good lip balm should look appealing and consistent.

2.Odor:

The product is checked for pleasant fragrance and absence of rancid or unpleasant smell. Any bad odour may indicate spoilage or oxidation of oils.

3.Texture:

Texture is evaluated by applying the lip balm on the skin or lips. It should feel smooth, soft, non-gritty, and comfortable without stickiness or roughness.

4.Melting Point:

Melting point is determined to ensure the product remains solid at room temperature but melts slightly on contact with lips for easy application. If too low, it may melt during storage; if too high, it may become hard.

5.pH Value (if applicable):

For lip balms containing water-based herbal extracts or aqueous phase, pH is measured. It should be close to neutral and safe for delicate lip skin to avoid irritation.

6.Spreadability:

Spreadability indicates how easily the lip balm glides over the lips. It should spread uniformly without excessive force. Good spreadability improves user comfort and product performance.

7.Hardness / Breaking Strength:

Hardness is tested to determine the firmness of the lip balm stick. It should not break easily during use, but should also not be excessively hard. Proper hardness ensures convenient application and packaging stability.

8.Homogeneity:

The lip balm is checked for uniform mixing of ingredients. There should be no lumps, uneven colour, phase separation, or granules. A homogeneous product gives consistent results.

9.Stability Study:

The formulation is stored under different temperatures and humidity conditions for a specific period. Changes in colour, odour, texture, melting behaviour, and separation are observed to determine product stability.

10.Moisturizing Property:

The lip balm is evaluated for its ability to hydrate, soften, and protect dry lips. It should reduce dryness and prevent chapping after regular use.

11.Skin Irritation Test:

A small quantity is applied to the skin to observe any redness, itching, burning, or allergic reaction. The product should be non-irritant and safe for regular use.

12.Net Content / Weight Variation:

The weight of individual lip balm containers is measured to ensure each unit contains the correct amount of product and maintains manufacturing consistency.

13. Shelf Life:

Shelf life is determined by studying how long the lip balm remains safe, stable, and effective under recommended storage conditions.

14. Microbial Limit Test:

Especially for herbal or water-containing lip balms, microbial testing is performed to ensure the product

is free from harmful bacteria, fungi, or contamination.

15. Packaging Compatibility:

The lip balm container is checked to ensure no leakage, reaction, deformation, or sticking of product occurs during storage and use.^{14,15}



Figure 4: Evaluation of lip balm

II. Conclusion:

This review provides an overview of herbal lip balm and its growing importance in cosmetic care. It is generally considered safe and has minimal or no side effects when prepared using suitable natural ingredients. Herbal lip balm is formulated with various plant-based materials such as natural oils, waxes, butters, extracts, and colorants that help nourish, moisturize, and protect the lips. Therefore, the use of natural ingredients represents a positive step toward healthier cosmetic products that can be widely accepted and used with satisfaction by consumers. Improvements in packaging design, applicators, and containers have also reduced production costs and increased convenience, contributing to the widespread popularity of herbal lip balm. Herbal lip balm offers a natural, safe, and effective alternative to synthetic lip care products. Its moisturizing, soothing, and protective properties make it highly beneficial for maintaining healthy lips. With increasing consumer preference for herbal

and eco-friendly cosmetics, herbal lip balm has significant potential for future development and wider market acceptance.

REFERENCE:

- [1] Deshmukh S, M Chavan, Sutar M, Singh S.; Preparation and evaluation of natural lipstick from bixaorenella seeds.; International Journal of Pharma and Biosciences.2013.
- [2] Azwanida N, Hui M S, Afandi A, Mohamed S, Zulhisyam A K, Ayob A, Rusli N, Rasat M S M; Color stability evaluation of pigment extracted from hylocereuspolyrhizus, clitoreaeternatae and pandanusamaryllfolius as cosmetic colorants and premarket survey on customer acceptance on natural cosmetic product. Journal of Tropical Resources and Sustainable Sciences.2015; 3:61-67.
- [3] Kumar Sumit, Swarankar Vivek, Sharma Sujata, Baldi Ashish, Herbal Cosmetics: Used for Skin and Hair December, Inventi Rapid: Cosmeceuticals,2012; 4: 1-8.

- [4] Nanda S, Nanda A, Khar RK, Cosmetic technology, 1st edition, Birla Publication Pvt. Ltd New Delhi (India), 2007; 330-53.
- [5] Larsson SC, Naslund I, Rutegård J, Wolk A, Vitamin A, retinol, and carotenoids and the risk of gastric cancer: a prospective cohort study, *Am. J. Clin. Nutr.*, 2007; 85(2): 497–503. [6] Sunil R, Shekhar T C, Ashutosh B. Formulation and evaluation of a herbal lipstick: A new approach. *International Journal of Pharmaceutical Erudition*, 2013; 3(1): 26-30.
- [7] Kaul S, Dwivedi S. Indigenous ayurvedik knowledge of some species in the treatment of human disease and disorders. *Inter J Pharm and Life Sci* 2010; 1 (1):44-49
- [8] Dwivedi S, Dwivedi A, Dwivedi SN. Folklore uses of some plants by the tribal are of Madhya Pradesh with special reference to their conservation. *Ethno botanical Leaflets*. 2008; 12: 74 1-743.
- [9] Afandi, A.S.R.U.L.; Lazim, A.M.; Azwanida, N.N.; Bakar, M.A.; Airianah, O.B.; Fazry, S. Antibacterial properties of crude aqueous *Hylocereus polyrhizus* peel extracts in lipstick formulation against gram-positive and negative bacteria. *Malaysian Appl. Biol.* 2017,46, 29–34.
- [10] Ghongade, K.; Bodake, V.; Badadare, S.; Magdum, M.; Gawande, N.; Kate, S.; Waghmare, K. Formulation and Evaluation of some Cosmetic preparations using novel natural colorant from *Ixora coccinea*. *Asian J. Res. Pharm. Sci.* 2021, 11, 22–28.
- [11] Lwin, T.; Myint, C.; Win, H.; Oo, W.; Chit, K. Formulation and evaluation of lipstick with betacyanin pigment of *hylocereus polyrhizus* (Red Dragon Fruit). *J. Cosmet. Dermatol. Sci. Appl.* 2020, 10, 212.
- [12] Ghongade, K.; Bodake, V.; Badadare, S.; Magdum, M.; Gawande, N.; Kate, S.; Waghmare, K. Formulation and Evaluation of some Cosmetic preparations using novel natural colorant from *Ixora coccinea*. *Asian J. Res. Pharm. Sci.* 2021, 11, 22–28.
- [13] Mahanthesh, M.C.; Manjappa, A.S.; Shinde, M.V.; Sherikar, A.S.; Disouza, J.I.; Namrata, B.U.; Ajija, W.C. Design, development and assessment of herbal lipstick from natural pigments. *Int. J. Pharm. Sci. Rev. Res.* 2020, 61, 59–64.
- [14] Yusof, A.A.B.; Ajit, A.B.; Sulaiman, A.Z.; Naila, A. Production of lip balm from stingless bee honey. *Maldives Natl. J. Res.* 2018, 6,57–72.
- [15] Malvandi, H.; Sancholi, F. Assessments of some metals contamination in lipsticks and their associated health risks to lipstick consumers in Iran. *Environ. Monit. Assess.* 2018, 190, 1–8.