INTERNATIONAL JOURNAL OF PHARMACEUTICAL SCIENCES
[ISSN: 0975-4725; CODEN(USA): IJPS00]
Journal Homepage: https://www.ijpsjournal.com

Research Article

Formulation and Evaluation of Herbal Lip Balm using Natural Ingredients

Ankita Wankhede*, Mobeen Manyar

Aditya Institute of Pharmacy, Chalisgaon, Maharashtra 424101

ARTICLE INFO

Published: 16 Jun 2026
Keywords:
Herbal lip balm, herbal cosmetics, beetroot extract, beeswax, coconut oil, physicochemical evaluation, natural cosmetics, stability studies.
DOI:
10.5281/zenodo.20722414

ABSTRACT

Herbal cosmetics have gained significant importance in recent years due to increasing awareness regarding the harmful effects associated with synthetic cosmetic products. Lip balms are commonly used cosmetic formulations intended to protect, moisturize, and improve the appearance of lips. The present research focuses on the formulation and evaluation of a herbal lip balm prepared using natural ingredients such as coconut oil, beeswax, vitamin E, honey, beetroot extract, and rose water. These ingredients were selected because of their moisturizing, antioxidant, antimicrobial, soothing, and protective properties. The lip balm was prepared using the double boiler method to ensure proper melting and homogenization of ingredients without degradation of heat-sensitive constituents. The prepared formulation was evaluated for various physicochemical and organoleptic parameters including pH, melting point, spreadability, appearance, odor, texture, and stability. The pH of the prepared formulation was found to be approximately 6.0, which is compatible with the delicate lip surface. The melting point was observed in the range of 63–65°C, indicating good thermal stability. The formulation showed satisfactory spreadability, smooth texture, pleasant odor, and good stability under room temperature, refrigeration, and elevated temperature conditions. Stability studies demonstrated that the prepared lip balm maintained its color, texture, and consistency without phase separation or significant changes in physicochemical properties. The study concluded that herbal lip balm prepared using natural ingredients provides effective moisturization, protection, healing, and aesthetic benefits without the harmful effects associated with synthetic chemicals. The developed formulation can therefore serve as a safe, stable, eco-friendly, and cost-effective alternative to conventional lip care products.

INTRODUCTION

Cosmetics have been used by humans for thousands of years for beautification, hygiene, and

***Corresponding Author:** Ankita Wankhede
Address: *Aditya Institute of Pharmacy, Chalisgaon, Maharashtra 424101*
Email : ankitawankhede0208@gmail.com
Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

protection of the skin. Ancient civilizations such as India, Egypt, and China relied mainly on natural substances including plant extracts, oils, herbal preparations, and mineral compounds for cosmetic purposes. With industrialization and technological advancement, synthetic cosmetic products became increasingly popular because of their longer shelf life, lower cost, and immediate aesthetic appeal. However, the extensive use of synthetic chemicals in cosmetic formulations has raised concerns regarding safety and toxicity.

Lip care products are among the most frequently used cosmetic preparations. Lips are delicate structures lacking sebaceous glands and therefore cannot retain moisture naturally. Exposure to environmental conditions such as sunlight, wind, cold weather, pollution, and dehydration often results in dryness, cracking, and chapping of lips. Conventional lip balms commonly contain synthetic ingredients such as parabens, artificial fragrances, petroleum jelly, artificial colors, and preservatives, which may cause irritation, allergic reactions, and long-term adverse effects.

Herbal cosmetics have emerged as safer alternatives because they utilize naturally derived ingredients that are biocompatible, eco-friendly, and less harmful. Herbal lip balms not only provide moisturization but also offer therapeutic benefits including healing, antioxidant protection, and nourishment.

The present study focuses on the development of a herbal lip balm using coconut oil, beeswax, vitamin E, honey, beetroot extract, and rose water. Coconut oil acts as a moisturizer and emollient, beeswax provides structure and protection, vitamin E acts as an antioxidant, honey contributes healing and humectant properties, beetroot extract serves as a natural coloring agent, and rose water provides soothing and refreshing effects.

The formulation and evaluation of herbal lip balm were carried out to assess its quality, stability, safety, and suitability for regular use. This study aims to promote the use of herbal formulations as safer and more sustainable alternatives in cosmetic science.

2. LITERATURE REVIEW

Several studies have emphasized the growing demand for herbal cosmetic products due to increasing awareness regarding the harmful effects of synthetic chemicals. The World Health Organization (WHO) has recognized the importance of traditional and herbal medicine in healthcare systems worldwide.

Research studies on herbal lip balm formulations have reported that natural ingredients provide effective moisturization, antioxidant activity, and skin protection. Coconut oil and beeswax are among the most commonly used ingredients in herbal lip care formulations because of their emollient and protective properties.

Beetroot extract has gained popularity as a natural coloring agent because it provides an attractive reddish tint without the harmful effects associated with synthetic dyes. Vitamin E is widely used in cosmetic science because of its antioxidant and skin repair properties.

Honey has also been extensively studied for its wound healing, antimicrobial, and moisturizing effects. Rose water is traditionally used in skincare preparations due to its soothing, cooling, and refreshing action.

Various researchers have concluded that herbal lip balms are safer, biodegradable, and suitable for long-term use compared to synthetic formulations. Stability studies conducted on herbal formulations indicate that proper ingredient selection and

manufacturing methods can result in stable and effective cosmetic products.

The literature strongly supports the use of herbal ingredients in cosmetic science and highlights the potential of herbal lip balm as a safe and effective alternative to conventional lip care products.

3. AIM AND OBJECTIVES

Aim

To formulate and evaluate a herbal lip balm using natural ingredients for safe and effective lip care.

Objectives

1. To prepare a herbal lip balm using natural ingredients.
2. To evaluate the physicochemical properties of the formulation.
3. To study the spreadability and stability of the prepared lip balm.
4. To develop a formulation free from harmful synthetic chemicals.
5. To provide moisturization, protection, and healing benefits to lips.
6. To assess the suitability of herbal ingredients in cosmetic formulations.

4. ANATOMY OF LIPS

The lips are soft, flexible structures surrounding the oral cavity and play important roles in speech, facial expression, sensation, and food intake. Structurally, lips consist of skin, connective tissue, muscle fibers, blood vessels, and mucous membranes.

Unlike normal skin, lips lack sebaceous glands and sweat glands, making them more vulnerable to dehydration and dryness. The outermost protective layer of lips is thin compared to other skin surfaces, allowing underlying blood vessels to become visible and giving lips their characteristic reddish appearance.

Structural Components of Lips

- **External Skin**

The outer layer consists of thin skin lacking hair follicles and oil glands.

- **Vermilion Border**

The vermilion zone forms the visible red portion of the lips and contains numerous capillaries.

- **Mucous Membrane**

The inner surface is lined by mucous membrane that helps maintain moisture.

- **Muscle Layer**

The orbicularis oris muscle enables lip movements essential for speech and facial expression.

Importance in Lip Care

Due to the absence of natural oil-producing glands, lips require external moisturization and protection. Failure to provide adequate care may lead to dryness, cracking, fissures, and irritation.

5. COMMON LIP PROBLEMS

5.1 Dry and Chapped Lips

Dryness and cracking occur due to dehydration, environmental exposure, and lack of proper moisturization.

5.2 Angular Cheilitis

Inflammation occurring at the corners of the mouth caused by infection or nutritional deficiencies.

5.3 Cold Sores

Fluid-filled blisters caused by herpes simplex virus infection.

5.4 Sunburned Lips

Excessive ultraviolet exposure damages lip tissues and causes redness, pain, and peeling.

5.5 Allergic Reactions

Synthetic fragrances and preservatives present in conventional cosmetics may cause irritation.

5.6 Lip Pigmentation

Darkening of lips due to smoking, sun exposure, hormonal imbalance, or synthetic products.

6. NEED FOR HERBAL LIP BALM

Herbal lip balms are increasingly preferred because they provide safe and effective lip care without harmful side effects.

- **Prevention of Dryness**

Natural oils and waxes help maintain moisture and prevent dehydration.

- **Protection from Environmental Damage**

Beeswax creates a protective barrier against wind, pollution, and UV exposure.

- **Healing Benefits**

Vitamin E and honey promote repair of damaged and cracked lips.

- **Avoidance of Harmful Chemicals**

Herbal formulations eliminate the risks associated with synthetic chemicals such as parabens and artificial dyes.

- **Eco-Friendly Nature**

Natural products are biodegradable and environmentally sustainable.

7. MATERIALS USED

The following ingredients were used in the preparation of herbal lip balm:

Sr. No.	Ingredient	Function
1	Coconut Oil	Moisturizer and emollient
2	Beeswax	Structural base and protective agent
3	Vitamin E	Antioxidant and healing agent
4	Honey	Humectant and antimicrobial agent
5	Beetroot Extract	Natural coloring agent
6	Rose Water	Cooling and soothing agent

8. INGREDIENT PROFILE

8.1 Coconut Oil

Coconut oil is obtained from the kernel of mature coconuts. It contains saturated fatty acids such as lauric acid that provide moisturizing and antimicrobial properties.

Role in Lip Balm

- Moisturizes lips
- Prevents dryness
- Improves texture
- Enhances spreadability

8.2 Beeswax

Beeswax is a natural wax secreted by honeybees and is commonly used in cosmetics.

Role in Lip Balm

- Provides firmness
- Forms protective barrier
- Enhances stability
- Prevents moisture loss

8.3 Vitamin E

Vitamin E is a fat-soluble antioxidant widely used in cosmetic formulations.

Role in Lip Balm

- Prevents oxidative damage
- Improves healing
- Maintains softness
- Enhances shelf life

8.4 Honey

Honey is a natural humectant produced by honeybees.

Role in Lip Balm

- Retains moisture
- Provides antimicrobial action
- Soothes irritation
- Heals cracked lips

8.5 Beetroot Extract

Beetroot extract contains betalain pigments responsible for natural red coloration.

Role in Lip Balm

- Natural coloring agent
- Provides antioxidant benefits
- Improves aesthetic appeal
- Nourishes lips

8.6 Rose Water

Rose water is obtained by steam distillation of rose petals.

Role in Lip Balm

- Provides cooling effect
- Maintains pH balance
- Enhances fragrance
- Soothes lips

9. FORMULATION OF HERBAL LIP BALM

Ingredient	Quantity	Function
Coconut oil	30 ml	Moisturizer
Beeswax	5.5 g	Structural base
Vitamin E	0.30 ml	Antioxidant
Honey	2 g	Emollient
Beetroot extract	5 g	Natural pigment
Rose water	3 ml	Cooling and fragrance

10. METHOD OF PREPARATION

The herbal lip balm was prepared using the double boiler method.

Step 1: Preparation of Water Bath

A vessel containing water was heated gently, and another container was placed over it.

Step 2: Melting of Beeswax

Beeswax was melted completely at controlled temperature.

Step 3: Addition of Coconut Oil

Coconut oil was added to the melted beeswax and stirred continuously.

Step 4: Incorporation of Honey and Beetroot Extract

Honey and beetroot extract were added gradually with continuous stirring.

Step 5: Addition of Heat-Sensitive Ingredients

After slight cooling, vitamin E and rose water were incorporated.

Step 6: Homogenization

The formulation was mixed thoroughly to obtain uniform consistency.

Step 7: Pouring into Containers

The prepared mixture was poured into lip balm containers.

Step 8: Cooling and Solidification

The formulation was allowed to cool and solidify at room temperature

11. EVALUATION PARAMETERS

Evaluation of the prepared herbal lip balm was carried out using various physicochemical and organoleptic parameters.

11.1 Organoleptic Evaluation

The formulation was evaluated for:

- Color
- Odor
- Texture
- Appearance

11.2 pH Determination

The pH was measured using pH paper and found to be approximately 6.0.

11.3 Melting Point Test

The melting point was observed between 63–65°C.

11.4 Spreadability Test

The lip balm spread smoothly and uniformly without fragmentation.

11.5 Stability Studies

Stability was assessed at:

- Room temperature (25 ± 3°C)
- Refrigeration (4 ± 2°C)
- Elevated temperature (40 ± 2°C)

11.6 Skin Irritation Test

No irritation or redness was observed after application.

12. RESULTS AND OBSERVATIONS

Parameter	Observation
Color	Red
Odor	Pleasant
Appearance	Smooth
pH	6.0

Melting Point	63–65°C
Spreadability	Good
Skin Irritation	None
Stability	Stable

The prepared herbal lip balm showed satisfactory physicochemical properties and stability.

13. STABILITY STUDIES

The prepared formulation was subjected to stability studies under different environmental conditions.

Parameter	25 ± 3°C	4 ± 2°C	40 ± 2°C
Color	Stable	Stable	Stable
Odor	Pleasant	Pleasant	Pleasant
pH	6.0	6.0	6.2
Texture	Smooth	Smooth	Slightly Soft
Spreadability	Good	Good	Intermediate

The formulation remained stable throughout the study period.

14. DISCUSSION

The present study successfully formulated and evaluated a herbal lip balm using natural ingredients. The selected ingredients provided multiple functional and therapeutic benefits.

Beeswax acted as a structural base and protective barrier, while coconut oil contributed moisturizing and emollient properties. Vitamin E improved antioxidant stability and supported healing of damaged lips. Honey enhanced hydration and antimicrobial protection. Beetroot extract provided natural coloration and antioxidant benefits, whereas rose water improved sensory characteristics and soothing action.

The prepared formulation demonstrated satisfactory organoleptic properties, appropriate pH, good spreadability, and acceptable thermal stability. Stability studies confirmed that the formulation remained stable under different storage conditions.

The results support the growing preference for herbal cosmetic products over synthetic formulations. Herbal lip balm can therefore serve as a safer and more eco-friendly alternative for lip care.

15. ADVANTAGES OF HERBAL LIP BALM

1. Safe and natural formulation
2. Provides effective moisturization
3. Prevents lip dryness and cracking
4. Free from harmful synthetic chemicals
5. Eco-friendly and biodegradable
6. Suitable for sensitive skin
7. Provides antioxidant protection
8. Offers therapeutic and cosmetic benefits
9. Improves natural lip texture and appearance
10. Suitable for long-term use

16. LIMITATIONS

1. Shorter shelf life compared to synthetic products
2. Natural colorants may fade over time
3. Stability may be affected by environmental conditions
4. Excessive heat can soften the formulation
5. Preservation challenges without synthetic preservatives

17. FUTURE SCOPE

Future studies may focus on:

- Improving shelf life using natural preservatives
- Incorporating SPF for sun protection
- Evaluating antimicrobial activity in detail
- Developing flavored herbal lip balms
- Exploring additional herbal ingredients
- Conducting large-scale consumer studies

18. CONCLUSION

The present research successfully demonstrated the formulation and evaluation of a herbal lip balm using coconut oil, beeswax, vitamin E, honey, beetroot extract, and rose water. The formulation exhibited satisfactory physicochemical properties including appropriate pH, good spreadability, pleasant appearance, and acceptable melting point.

The herbal lip balm remained stable under different storage conditions and did not produce irritation, confirming its safety and suitability for regular use. The natural ingredients provided moisturization, healing, antioxidant protection, and aesthetic benefits without the harmful effects associated with synthetic cosmetic ingredients.

The study highlights the importance of herbal cosmetics in modern cosmetic science and supports the development of safer, eco-friendly, and sustainable alternatives to conventional lip care products.

REFERENCES

1. World Health Organization (WHO) – Traditional Medicine. https://www.who.int/news-room/questions-and-answers/item/traditional-medicine
2. WHO – Traditional, Complementary and Integrative Medicine. https://www.who.int/health-topics/traditional-complementary-and-integrative-medicine
3. WHO Global Traditional Medicine Centre. https://www.who.int/teams/who-global-traditional-medicine-centre/overview
4. WHO Traditional Medicine Publications. https://www.who.int/teams/integrated-health-services/traditional-complementary-and-integrative-medicine
5. ResearchGate – Formulation and Evaluation of Herbal Lip Balm. https://www.researchgate.net/publication/389219214_Formulation_Evaluation_And_Comparative_Study_On_Herbal_Lipbalm
6. ResearchGate – Lip Balm Prepared Using Various Herbal Entities. https://www.researchgate.net/publication/374133780_Formulation_and_Evaluation_of_Lip_balm_Prepared_Using_Various_Herbal_Entities
7. ResearchGate – Natural Lip Balm Formulation. https://www.researchgate.net/publication/382520552_Formulation_and_evaluation_of_natural_lip_balm
8. ResearchGate – Lip Balm Using Different Herbal Pigments. https://www.researchgate.net/publication/379959255_under_Creative_Commons_CC-BY_40_Formulation_and_Evaluation_of_Lip_Balm_Using_Different_Herbal_Pigments
9. ResearchGate – Lip Balm Made from Beeswax and Coconut Oil. https://www.researchgate.net/publication/345931564_Formulation_and_characterization_of_lip_balm_made_from_beeswax_almond_oil_virgin_coconut_oil_and_honey
10. Journal of Pharmaceutical Research International – Production and Analysis of

Herbal Lip Balm. https://journaljpri.com/index.php/JPRI/article/view/7174

11. ResearchGate – Herbal Lipstick Using Beetroot. https://www.researchgate.net/publication/393523520_Formulation_and_Evaluation_of_Herbal_Lipstick_by_Using_Beta_Vulgaris_Beet_Root_A_Review_Paper
12. ResearchGate – Herbal Lipstick Using Natural Pigments. https://www.researchgate.net/publication/392888735_FORMULATION_AND_EVALUATION_OF_HERBAL_LIPSTICK_USING_NATURAL_PIGMENTS_AND_FATS_TO_REDUCE_THE_RISK_OF_TOXICITIES_CAUSED_BY_SYNTHETIC_PIGMENTS
13. NCBI / PubMed Central – Traditional Medicine Research. https://pmc.ncbi.nlm.nih.gov/articles/PMC12578523/
14. ResearchGate – Review on Herbal Lip Balm. https://www.researchgate.net/publication/390338906_A_Review_on_Formulation_and_Evaluation_of_Herbal_Lip_Balm
15. Traditional Medicine Global Library. https://tmgl.org/
16. ResearchGate – Formulation and Evaluation of Herbal Lip Balm Using Natural Ingredients. https://www.researchgate.net/publication/357109012_Formulation_and_Evaluation_of_Herbal_Lip_Balm
17. International Journal of Pharmaceutical Sciences Review and Research – Herbal Cosmetics Review. https://globalresearchonline.net/journalcontents/v67-1/44.pdf
18. ResearchGate – Herbal Cosmetics and Their Benefits. https://www.researchgate.net/publication/283444691_Herbal_Cosmetics_and_their_Benefits
19. NCBI – Cosmetics and Skin Care Research. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6117694/
20. ScienceDirect – Herbal Cosmetic Formulations. https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/herbal-cosmetics

HOW TO CITE: Ankita Wankhede, Mobeen Manyar, Formulation and Evaluation of Herbal Lip Balm using Natural Ingredients, Int. J. of Pharm. Sci., 2026, Vol 4, Issue 6, 3962-3970. https://doi.org/10.5281/zenodo.20722414