Formulation and Evaluation of Lipbalm

Mr. Arjun B. Khatik, Mr. Satish S. Hiwale, Mr. Karan B. lakkas, Mr. Shubham P. Meher, Mr. Saurabh R. Bande, Mr. Manoj N. Wavhale
[1,2,3,4,5]*Student, Sayali Charitable Trust's College of Pharmacy*
[6] *Assistant Professor, Sayali Charitable Trust's College of Pharmacy*

Abstract- Lip care products used on a daily basis often contain harmful heavy metals and preservatives. These substances can be absorbed through the pores of the lips or accidentally ingested. Heavy metals such as lead can negatively affect the heart and brain, while cadmium and chromium are known to be carcinogenic. Certain preservatives have also been linked to an increased risk of breast cancer. Lip balms are topical formulations applied to the lips to prevent dryness and protect them from adverse environmental factors. Organic lip balms, in particular, nourish the lips, help maintain hydration, and offer protection against chapping and dryness. They promote the natural health and beauty of the lips and are suitable for use by all genders. In the present study, various organic ingredients, such as ghee and honey, were utilized for their moisturizing and healing properties to develop a natural lip balm. The prepared lip balm was evaluated based on organoleptic characteristics, melting point, spreadability, pH, and stability. Stability studies were conducted over 30 days at three different storage conditions: room temperature (25.0 ± 3.0 ºC), refrigeration (4.0 ± 2.0 ºC), and elevated oven temperature (40.0 ± 2.0 ºC). Results showed that the lip balm maintained a uniform nature and perfect application without any deformation at room and refrigeration temperatures. The mean melting point was recorded at 69 ºC, and the mean pH was 7.2, which is close to neutral. However, storage at elevated temperature (40.0 ± 2.0 ºC) is not recommended due to a loss in product functionality observed during stability testing.

Keywords: Lipbalm

INTRODUCTION

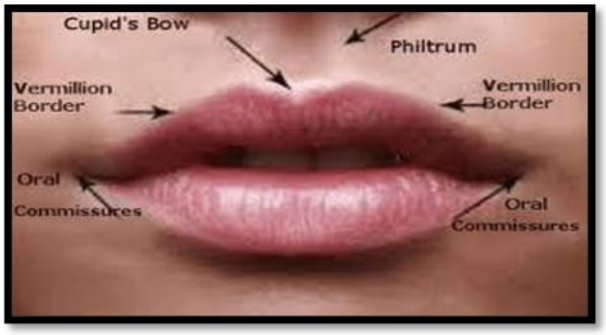
The term "organic" is often associated with safety, particularly when compared to synthetic or artificial substances, which can be harmful to human health. In the field of cosmetics, products containing physiologically active ingredients—often referred to as "cosmeceuticals"—are designed to provide therapeutic or drug-like benefits. These ingredients exhibit healing properties, which manifest as positive topical effects and protection against the progression of various skin conditions. The objective of the present study was to develop an organic lipstick formulation with minimal adverse effects. Unlike lipsticks, which are primarily used to enhance the appearance of the lips, lip balms serve the purpose of moisturizing. Lip balms form a flexible, adhesive, and moisture-resistant oily layer on the lips and typically do not contain coloring agents.

Anatomy of the Lips

The structure of the lips includes various anatomical components that influence both their function and appearance. Below is a summary of the key features of lip anatomy:

- Skin: The outermost layer of the lips consists of skin, similar to the rest of the body. However, lip skin is notably thinner and more delicate.
- Vermilion Border: This is the clearly defined line that separates the reddish portion of the lips (vermilion zone) from the surrounding facial skin.
- Vermilion Zone: This is the red or pink area of the lips, characterized by a high concentration of blood vessels, which gives the lips their color.
- Philtrum: A vertical groove located in the center of the upper lip, extending from the base of the nose.
- Cupid's Bow: The double curve or V-shaped contour found at the center of the upper lip.
- Oral Mucosa: The inner surface of the lips is lined with a thin, moist tissue known as the oral mucosa. It is distinct from the outer skin and plays a critical role in maintaining lip moisture.
- Labial Glands: These small glands within the lips help keep them hydrated and also support functions like speaking and eating.
- Nerve Endings and Musculature: Lips contain a high density of nerve endings, making them

highly sensitive to touch, temperature, and pain. The orbicularis oris muscle encircles the mouth and is responsible for various lip movements, such as smiling and puckering.



Fig; Lips Structure

Lips-Related Problems :

Several conditions can affect the lips, causing discomfort, pain, or changes in appearance. Below are some common lip-related issues:

1. Dry Lips
   Dry lips result from the loss of moisture and dehydration of the lip surface. This condition can be triggered by environmental factors such as cold weather, dry air, or frequent lip-licking. Symptoms include a feeling of tightness, cracking, and peeling of the lips.
2. Chapped Lips
   Chapped lips are a more severe form of dryness and may be accompanied by pain, discomfort, and occasional bleeding. They are commonly caused by prolonged exposure to dry or harsh weather, wind, or sun.
3. Cold Sores
   Cold sores, also known as fever blisters, are small, painful, fluid-filled blisters that typically appear on or around the lips. They are caused by the herpes simplex virus (HSV) and are highly contagious.
4. Inflammation / Cheilitis
   Angular cheilitis is characterized by inflammation, redness, and cracking at the corners of the mouth. This condition may result from bacterial or fungal infections, nutritional deficiencies, or prolonged exposure to moisture.
5. Lip Infections
   Infections caused by bacteria, viruses, or fungi can affect the lips. Common signs of infection include swelling, redness, pain, and the appearance of pus-filled blisters or sores.
6. Allergies
   Some individuals may experience allergic reactions to ingredients in foods, cosmetics, or lip care products. Symptoms of lip allergies include swelling, itching, redness, and blistering.
7. Lip Discoloration
   Discoloration of the lips can be caused by factors such as excessive sun exposure, smoking, certain medications, or underlying medical conditions. This may result in the lips appearing darker or uneven in color.

Types Of Lip Balm :

There are 7 kinds of lip balms to choose from

1. Tinted Lip Balm

A type of lip balm used to hydrate and colorize the lips called tinted. If the user doesn't want to wear a heavy coat of lipstick, tinted lip balms are a perfect alternative. Users use tinted lip balm to moisturize their lips as well as to give them a brilliant wash of color. Just apply the colored lip balm directly to the lips to use it.

2. Medicated Lip Balm

Medicated lip balms are most likely to be the least soothing and irritating lip balms amongest the others. This lip balm is usually prescribed by dermatologists in medication for chapped lips and other conditions regarding the lips.

3. Flavoured Lip Balm

The flavoured lip balm is a kind of lip balm which has flavourings. Flavoured lip balms are lip balms that are added with flavour such as vanilla, mint, mango and many more fruity flavours. This lip balm is made for moisturizing and is also added with special flavours in order to entice the taste buds and smell of the users.

4. Organic Lip Balm

The organic lip balm is a kind of lip balm which have organic or natural ingredients. While there are other lip balms which has chemical ingredients that may harm the lips and skin, the organic lip balm is usually made from organic ingredients such as avocado oils, jojoba oils, beeswax, vitamin E, hemp, and cocoa butter. The organic lip balm still functions like any other lip balms, which provides moisture and protection from dry and chapped lips.

5. SPF Lip Balm

The SPF lip balm are a kind of lip balm which contains

ingredients that protect the lips from the harmful effects of the Sun rays. The SPF lip balm functions like a sunscreen to protect the lips from sun damage, burning, and even skin cancer. If the user is skin conscious and is avoiding the harmful effects of the sun, then this lip balm is the perfect thing to use on a day's out.

6. Plumping Lip Balm

The plumping lip balm is a kind of lip balm that doesn't just moisturize the lips, but also makes the lips look more rounder. Plumping lip balms is made to give protection to the lips, but at the same time it has special ingredients to make the lips look fuller. The plumping lip balm is essential to users who want to achieve a plumper lip without doing any surgical procedures.

7. CBD or Hemp Oil Lip Balm

Cannabidiol (CBD) or hemp oil lip balm are a kind of lip balm that contains CBD oil or hemp oil. Hemp oil is from the hemp plant which is an excellent moisturizer for the lips, while the CBD oil is an active compound of cannabinoids which has anti-inflammatory benefits. The lip balm will act as an anti-oxidant to the lips to help sooth dry and heal chapped lip

INGREDIENTS :

Main active Ingredient:

1) Rose

Fig : Rose

Kingdom	Plantae
Class	Trachaeophytes
Family	Rosaceae
Sub family	Rosoadeae
Tribe	Roseae
Genus	Rosa.L

A rose is either a woody perennial flowering plant of the genus *Rosa* in the family Rosacea or the flower it bears. There are over three hundred species and tens of thousands of cultivars. They form a group of plants that can be erect shrubs, climbing or trailing with stems that are often armed with sharp prickles. Their flowers vary in size and shape and are usually large and showy, in colours ranging from white through yellows and reds.

Chemical constituents:

Rose petals and rose hips contains Vitamin A, B1, B2, B3, B6, C, E and K, folic acid, potassium, Calcium, Iron, tannin and wide range of enzymes. Rose flowers are Anti-depressant, anti-spasmodic, aphrodisiac, astringent, increase bile production, cleansing, anti-bacterial and antiseptic. Rose hips tea is also used in the treatment of diarrhoea. Rose petals are mildly sedative, antiseptic, anti- inflammatory, and antiparasitic. They are also mild laxative, a good supportive tonic for the heart, and useful for lowering cholesterol. The antiseptic nature of rose petals make them a wonderful treatment for wounds, bruises, rashes and incisions, their anti-inflammatory properties make them a wonderful treatment for sore throats or ulcers. They can stimulate the liver and increase appetite and circulation. The extract of the rose petals is used as e drops or eye wash in burning sensation of the eyes.[8]

Uses:

- Cure Depression & Anxiety
- Anti- inflammatory property
- Rose oil for different in infection: Rose essential oil has strong antiseptic properties, which means that it can be used to prevent wounds from becoming septic or developing tetanus.
- Skin care benefit: Rose essential oil is widely used for cosmetic purposes as it is very good for your skin. It can help you fade away scars left over from acne, boils, pox, and injuries and leave you with smooth skin.
- Perfuming agent
- Make lips look pul[9]

Material and method:

Water bath	Glass rod
Bunsen burner	China dish
Spatula	Filter paper
Weighing balance	Beaker
Tipond stand	Glass slide

Collection and extraction:

All the medicinal plants and herbs are selected for herbal lip balm for lip moisturization are rose, beetroot, vitamin E, shea butter, These materials are collected from local market

1) Bees Wax

Fig : Bees Wax

Beeswax (cera alba) is a natural wax produced by honey bees of the genus Apis. The wax is formed into scales by eight wax-producing glands in the abdominal segments of worker bees, which discard it in or at the hive. The hive workers collect and use it to form cells for honey storage and larval and pupal protection within the beehive. Chemically, beeswax consists mainly of esters of fatty acids and various long-chain alcohols. Candle-making has long involved the use of beeswax, which burns readily and cleanly, and this material was traditionally prescribed for the making of the Paschal candle or "Easter candle". Beeswax candles are purported to be superior to other wax candles, because they burn brighter and longer, do not bend, and burn cleaner. It is further recommended for the making of other candles used in the liturgy of the Roman Catholic Church. Beeswax is also the candle constituent of choice in the Eastern Orthodox Church.

2) Rose infused oil

Fig :Rose infused oil

Dried rose petals was placed in a clean, dry glass jar. Coconut oil was added in such a way that the petals were covered by about one inch of oil.Cover the jar was covered with a tight fitting lid and was shaked. The jar was placed in a paper bag and was stored near a warm, sunny window. Once the oil has been infusing for 4-6 weeks, the calendula petals were strained and the oil was extracted.

3) Beetroot powder:

Fig :Beetroot powder

Beetroot was washed properly and was air dried properly. Then it was Cut into small pieces. The pieces were placed in the mortar and was macerated with help of pestle. The slurry was filtered out with help of filter paper. The liquid separated out and powder was used as a colouring agent in the preparation.

4) Honey

Fig : Honey

Honey is a sweet, viscous food substance made by honey bees and some other bees. Bees produce honey from the sugary secretions of plants (floral nectar) or from secretions of

other insects (such as honeydew), by regurgitation, enzymatic activity, and water evaporation. Honey bees store honey in wax structures called honeycombs, whereas stingless bees store honey in pots made of wax and resin. The variety of honey produced by honey bees (the genus Apis) is the best-known, due to its worldwide commercial production and human consumption. Honey is collected from wild bee

colonies, or from hives of domesticated bees, a practice known as beekeeping or apiculture (meliponiculture in the case of stingless bees).

5) Methyl Parabin

Fig :Methyl Parabin

Methylparaben, also methyl paraben, one of the parabens, is a preservative with the chemical formula CH3(C6H4(OH)COO). It is the methyl ester of p-hydroxybenzoic acid. Methylparaben is an anti-fungal agent often used in a variety of cosmetics and personal-care products. It is also used as a food preservative and has the E number E218.Methylparaben is commonly used as a fungicide in Drosophila food media at 0.1%. To Drosophila, methylparaben is toxic at higher concentrations, has an estrogenic effect (mimicking estrogen in rats and having anti-androgenic activity), and slows the growth rate.

Formulation:

Sl no.	Ingredients	Biological action in the preparation	Amount used in the preparation
1.	Bees wax	Base	4g
2.	Shea butter	Humectant	2.5g
3.	Rose oil	Perfume	0.25ml
4.	Beetroot powder	Colouring agent	0.5g
5.	Vitamin E	Preservative	0.15ml
6.	Rose infused oil	API	2.6ml

Preparation:

1. A water bath is kept on the burner and is filled with water for boiling.
2. Bees wax filled in china dish is kept on the boiling water.
3. The beeswax is heated till it melts properly.
4. To the molten beeswax, cocoa/shea butter and honey/vitamin E are added and is made homogeneous with slow stirring with glass rod.
5. In the mixture rose infused oil is added and mixed properly.
6. After homogeneous mixture is obtained, colouring agent and perfume is added.
7. The mixture is poured in the container.
8. Then the mixture is cooled in the ice bath or dried in the sunlight.

EVALUATION OF LIPBALM

1. Melting Point:

For melting point, the sample of lip balm was taken in a glass capillary whose one end was sealed by flame. The capillary containing drug was dipped in liquid paraffin inside the melting point apparatus which was equipped with magnetic stirring facility. Melting was determined visually, and melting point was reported.

2. Organoleptic Properties:

The lip balm was studied for the basic organoleptic characters such as colour, odour, taste and appearance.

3. Test of spreadability:

The product was applied (at room temperature) repeatedly onto a glass slide to visually observe the uniformity in the formation of the protective layer and whether the stick fragmented, deformed or broke during application.

G - Good: uniform, no fragmentation; perfect application, without deformation of the lip balm.

I - Intermediate: uniform; leaves few fragments; appropriate application; little deformation of the lip balm.

B - Bad: not uniform; leaves many fragments; difficult or inappropriate application, intense deformation of the lip balm

1. pH measurement:

The pH study was carried out by dissolving 1 gm of sample into 100 ml water. The pH measurement was done using pH paper.

2. Stability studies:

Prepared lip balm was placed for accelerated stability studies at room temperature (25.0 ± 3.0 ºC), refrigeration (4± 2.0 ºC) and oven temperature (40.0 ± 2.0 ºC) for 30 days. After 30 days

RESULT AND DISCUSSION

The formulation stored at room temperature and refrigerator showed similar behavior during the stability test. The organoleptic characteristics were stable and spreadability was evaluated as “Good.”

Storage under these conditions was considered adequate, particularly because the functionality of the product was maintained. Prepared lip balm shows good spreadability at normal temperature. According to results of the spreadability tests, storage in the normal room temperature is (25.0 ± 3.0°C). It was concluded that Organic lip balm can be a better option for treatment of various lip issues

Parameters	Observations
Colour	Red
Appearance	Excellent, Smooth
Odour	Pleasant
pH	6.5
Spreadability	Good

CONCLUSION

The formulation stored at room temperature and refrigerator showed similar behavior during the stability test. The organoleptic characteristics were stable and spreadability was evaluated as Good. Storage under these conditions was considered adequate, particularly because the functionality of the product was maintained. Prepared lip balm shows good spreadability at normal temperature. During the stability test, the developed formulation of organic lip balm exhibited an appropriate melting point (mean of 69°C), According to results of the spreadability tests, storage in the oven (40.0 ± 2.0 °C) was not recommended because of loss of product functionality observed during the normal stability test. It was concluded that Organic lip balm can be a better option for treatment of various lip issues.

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