

# Formulation and Evaluation of Moringa Seeds Lip Balm

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## ABSTRACT

Lip balm is one of the most well-liked cosmetics. Its main function is to moisturise the lips, relieve chapped lips, and prevent dryness. Although it has many variations and is widely used, it also has considerable disadvantages. Consider the unpleasant side effects and transient moisturising impact of chemical-based lip balm. Thus, we create a brand-new formulation of lip balm that not only incorporates herbal ingredients to reduce side effects but also maintains its moisturising properties for a long period. The ingredients in common lip care products include heavy metals and preservatives. The heavy metals harm the lips; they seep through their pores and may mistakenly result in internal consumption. Lead and its substitutes are harmful heavy metals that impair cardiac and neurological function, and cadmium and chromium may result in cancer in a variety of vital organs. The novel approach to cosmetic formulation was developed in response to the rising demand for natural products whose production is safe for both the environment and human health. The perception of an environmentally friendly composition is one of the main appeals of organic or herbal cosmetics. Lip balm, a cosmetic product akin to lipstick, moisturises the lips, prevents dry lips, and protects from the weather. Lip balm is resistant to environmental factors and temperature changes. The current lip balm formulas satisfy every requirement for the nourishing and safeguarding of lips.

**Keywords:** Moringa seeds, Lip balm, Lips

## INTRODUCTION

Lip balm or lip salve is a wax-like substance applied topically to the lips to moisturize and relieve chapped or dry lips, angular chills, stomatitis, or cold sores. Lip balm often contains beeswax or carnauba wax, camphor, acetyl alcohol, lanolin, paraffin, and petrolatum, among other ingredients. Some varieties contain dyes, flavours, fragrances, phenol, salicylic acid, and sunscreen. The applied lip balm is frequently consumed; thus, the health authorities must authorise them with caution. Lip balms can be used for colouring as well as moisturizing the lips. Herbal, is a sign of safety, satisfaction and surety of less or no harm to the users and so herbal lip balm can be made without the colours being compromised <sup>[1]</sup>. The public is becoming more and more interested in herbal cosmetic formulas. Technologies and tactics have been put in place to use organic raw materials in the formulation of these new approaches <sup>[2]</sup>. The public is becoming more and more interested in herbal

cosmetic formulas. Technologies and tactics have been put in place to use organic raw materials in the formulation of these new approaches <sup>[2]</sup>. These ingredients and goods that have been certified as organic are selected from the raw materials that are grown and cared for in a systematic way to make lip balm. It is preferred that these ingredients be free of dangerous chemical pesticides or manures, and they are stored using natural methods rather than modern ones under suitable conditions <sup>[3]</sup>. Chapped, dry lips can crack and get dry patches, especially in extreme weather. The absence of oil glands in the anatomical structure of the lips necessitates more care, miniaturization, and protection during the day. There is a huge population which have problem of dryness of lips in winters and some of these problems are continued to summer seasons also. The synthetic lip balms contain petrolatum, synthetic waxes, parabens, alumina and artificial fragrances and colours which are toxic. The lip balms may accidentally be eaten by the people and should a detailed study on the

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ingredients used to formulate the lip balms to avoid any acute or chronic effects due to these ingredients [2]. The lipsticks and lip balms have significant differences regarding the function of both of the formulations that the lipsticks have the function of imparting the colour to the lips while the lip balms have the function of nourishment and protection to the lips. Moringa oleifera seeds are high in nutrition value as well as it is also a promising crop. Though the extracted colour pigments are susceptible to light and air, its stability could be maintained by keeping them in low temperatures ( $\leq 14^{\circ}\text{C}$ ) and also devoid from light and air. These can then be a potent organic colour pigment which can be used in food as well as cosmetic industries stating the stability conditions [4]. The beeswax could retain the moisture necessary for healing the dried chapped scaly lips and to maintain its quality [5]. The plant is referred to by a number of names such as horseradish tree, drumstick tree, ben oil tree, miracle tree, and “Mother’s Best Friend”. This plant grown and widely cultivated in the northern part of Nigeria and many countries in tropical Africa. Moringa oleifera can be grown in a variety of soil conditions preferring well-drained sandy or loamy soil that is slightly alkaline. Almost every part of M. oleifera can be used for food [6-7]. Moringa oleifera is a versatile natural ingredient with numerous dermatological and therapeutic benefits. Known for its anti-inflammatory and antioxidant properties, it effectively combats oxidative stress and soothes inflammation. Its remarkable wound-healing ability promotes faster tissue repair and regeneration. For skin health, Moringa acts as a humectant, drawing moisture into the skin, while its emollient properties enhance softness and elasticity. It also helps brighten dark spots and even out skin tone, delivering essential nutrients for a healthier complexion. Additionally, its occlusive function forms a protective barrier, locking in moisture and preventing dehydration. Due to these multifaceted benefits, Moringa oleifera is a highly promising ingredient in skincare formulations and medical applications. [6] The lips serve as organs of pretension, suction and speech. It is composed of the skin, superficial fascia, orbicularis muscle and the muscles inserted around it (areolar tissue & mucous membrane). The margins of the lips are covered with dry, red mucous membrane, continuous with the skin and containing numerous vascular papillae and touch corpuscles. The mucous

membrane internally is reflected from the upper and lower lip upon the gums, and in the median line forms two folds of superior and inferior. The areolar tissue or sub mucous layer contains the coronary vessels which completely encircle the buccal orifice near the free margin of the lips. The coronary vessels are the superior and inferior coronary arteries which arise from the facial. The superior coronary is larger than the inferior, and anastomoses with its fellow of the opposite side and gives off a small artery to the septum arteriaseptinasi. Compression of this artery will sometimes control nasal haemorrhage. The superior labial or coronary vein begins as a plexus in the orbicularis muscle of the upper lip, passes with the coronary artery and drains into the facial vein a little below the alae of the nose of the veins which drain the lower lip the inferior coronary empties into the facial a little below the superior labial; but the chief branch from the lower lip descends as a rule to the submental vein, thence to the facial or often to the anterior jugular. The nerves supplying the lower lip are derived from the mental which emerges from the bone through the mental foramen and sends large twigs to the mucous membrane, the integument and the fascia of the lip and chin. Some of the lymphatic vessels of the lips pass to a gland just above the body of the hyoid bone, while others pass to the sub maxillary glands. The labial glands are in the sub mucous layer of the lips around the orifice of the mouth. They secrete a mucous fluid. Lip swelling might result from an allergic reaction. Sensitivity to particular foods or drinks, medications, cosmetics, or airborne allergens may be to blame for the reaction. The lips typically revert to normal if a cause is found and subsequently removed. However, the reason for the swelling is typically unidentified. The lips, particularly the lower lip, may become dry and hard from sun exposure. Damage that raises the risk of later cancer is indicated by red flecks or a white filmy appearance. This kind of damage can be minimised by using sunscreen-containing lip balm to the lips or by wearing a wide-brimmed hat to protect the face from the sun's harmful rays. The corners of the mouth may become uncomfortable, inflamed, red, cracked, and scaly as a result of lip inflammation (cheilosis). A diet that is deficient in vitamin B2 might cause cheilosis. The Freckles and irregularly shaped brownish areas (leukoplakia) are common around the lips and may last for many years. These marks are not cause

for concern. Multiple, small, scattered brownish black spots may be a sign of a hereditary disease called Peutz-Jeghers syndrome, in which polyps form in the stomach and intestines. Kawasaki disease, a disease of unknown cause that usually occurs in infants and children 8 years old or younger, can cause dryness and cracking of the lips and reddening of the lining of the mouth [9-10]. While Castor oil penetrates into deep skin and acts as moisturizer for lips, used in the treatment of dry and chapped lips. Honey lightens up the dark lips that it acts in regimentation to the lips, it also protects lips from UV radiation. Recently, some studies have investigated the use of honey to prevent infection and treat burns; they used honey as a remedy for the prevention of infection in bedsores and burns. It has been reported that honey can facilitate removing necrotic tissues, increase the granulation and epithelialization speed, and reduce scars. The antimicrobial power of honey prevents the growth of bacteria on the moist environment of skin surface. The factors that make honey a useful remedy for burns is: Acidic environment (pH= 3.4–6.1), high osmotic properties, avoids dressing from sticking to the wound, and decreases the dislodgement of granulation tissues at the time of dressing [11].

## MATERIALS AND METHODS

### Materials

#### Collection of plant material:

The Moringa Oleifera seed oil used as the main herbal ingredient in formulation of herbal lip balm. Other ingredients used in the formulation are cocoa butter & bees wax which were obtained from college laboratory. Virgin Coconut oil, vitamin E, olive oil and, vanilla essence was obtained from local market.

### Method

1. Melting the base material and adding other ingredients to the melted base:

The base materials used are cocoa butter and beeswax. Both of them were melted in a beaker on a water bath and in the melted base the other ingredients which are Moringa Oleifera seed oil, vitamin E, olive oil, and coconut oil were added, lastly, vanilla essence added to give a nice essence to the formulation.

2. Storage and Cooling at room temperature: The prepared formulation was allowed to settle at room temperature and was stored in a suitable wide-mouth container.

#### Formulation table:

**Table 1: Preparation of formulation of herbal lip balm**

Sr. No.	Ingredients	Formulation 1	Formulation2	Formulation3
1	Moringa oleifera seed oil	1ml	1ml	1ml
2	Beeswax	1gm	1.5gm	1.5gm
3	Cocoa butter	1gm	1gm	1.5gm
4	Vitamin E	1ml	1ml	1ml
5	Coconut oil	1ml	1ml	1ml
6	Castor oil	1ml	1ml	1ml
7	Vanilla essence	q.s	q.s	q.s



**Fig 1: Formulation of Lip Balm**

#### Optimized Formulation:

**Table 2: Final formulation of preparation**

Sr. No.	Ingredients	Qty
1	Moringa oleifera seed oil	1ml
2	Beeswax	1.5gm
3	Cocoa butter	1.5gm
4	Vitamin E	1ml
5	Coconut oil	1ml
6	Castor oil	1ml
7	Vanilla essence	q.s

**Figure 2: Final formulation of Lip Balm****Evaluation of Herbal Lip balm:**

It is very essential to maintain a uniform standard for herbal lip balm, keeping this view in mind the formulated herbal lip balm was evaluated on parameters such as Melting point, the force of application, surface anomalies, etc. The herbal lip balm showed the result in the specific limits for the respective evaluation parameter and was found nearly.

**1. Melting point**

Determination of melting point is important as it is an indication of the limit of safe storage. The melting point of formulated herbal lip rouge was determined by capillary tube method, the capillary was filled and kept in the capillary apparatus and firstly observed the product was slowly-slowly melted. After sometimes observed product was completely melted. The above procedure was done in 3 times and the melting point ratio was observed in all formulation.

**2. Organoleptic properties**

The lip balm was studied for organoleptic characters such as color, odor, taste and appearance.

**3. Test of spreadability:**

The test of spreadability consisted of applying the product 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. For this test, the following criteria were established by the analyst: 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.

**4. Water resistance of the applied area:**

It was recorded by applying a thin uniform coat over Tissue paper and by adding 5-6 drops of water with the help of a pipette. Prevention of wettability of the paper was considered as water resistance

**5. Measurement of pH:**

The pH of lip balm was determined to investigate the possibility of any side effects. As an acidic or alkaline pH may irritate lips, it was determined to keep the pH

of lip balm as close to neutral as possible. The pH study was carried out by dissolving 1 gm of sample into 100 ml water. The pH measurement was done using a pH meter.

#### 6. Skin irritation test:

It is carried out by applying the product on the skin for 10 Min.

#### 7. Perfume stability:

The formulated herbal lipsticks were tested after 30 days, to record fragrance.

#### 8. Stability studies:

Prepared lip balm was placed for accelerated stability studies at room temperature ( $25.0 \pm 3.0^\circ\text{C}$ ), refrigeration ( $4 \pm 2.0^\circ\text{C}$ ), And oven temperature ( $40.0 \pm 2.0^\circ\text{C}$ ) for 30 days. After 30 days, it was characterized for organoleptic properties, melting point, spreadability, and pH.

#### 9. Breaking Point (Load in gm)

This test was carried out to find out the value of the maximum load that lip balm can with stand before it breaks. This test indicates the strength of lip balm.

#### Evaluation Table:

**Table 3: Evaluation Table**

Sr. No.	Evaluation parameter	Inference
1	Color	white
2	Appearance	Good
3	Odor	Pleasant
4	pH	7.2
5	Skin Irritation	No
6	Melting Point	67
7	Perfume Stability	Good
8	Test of spread ability	Good

## RESULT

Herbal ingredients were used for formulating an herbal lip balm that contains Moringa oleifera seed oil. Herbal lip balm has been investigated for different evaluation parameters. After evaluation, it was found

that herbal lip balm containing Moringa oleifera seed oil was found to be safe and effective in desired properties. Hence from the present investigation, it was concluded that this formulated herbal lip balm has minimal and no side effects and thus shows maximum local effect on lips.

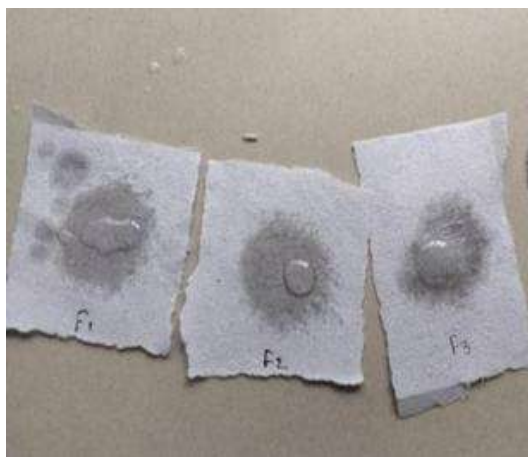


**Figure 3: Hardness Test**



**Figure 4: PH Test**





**Figure 5: Water resistance Test**



**Figure 5: Skin Irritation test**

## CONCLUSION

Due to tremendous demands of beauty enhancing products cosmetics industry is flourishing. This work has reviewed the current status of moringa oil lip balm products. This also studied all aspects of natural lip balm including natural ingredients, formulation methods, evaluation and applications. Hence it can be concluded that the extensive literature study has been performed on the natural lip balm products and shown wide scope for such products in future

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