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**Jadhav Vaibhav N**  
Student of Rashtriya College  
of Pharmacy Hatnoor,  
Kannad, Chh. Sambhajanagar  
Maharashtra, India

**More Sonali R**  
Student of Rashtriya College  
of Pharmacy Hatnoor,  
Kannad, Chh. Sambhajanagar  
Maharashtra, India

**Magar Puja S**  
Student of Rashtriya College  
of Pharmacy Hatnoor,  
Kannad, Chh. Sambhajanagar  
Maharashtra, India

**Waghmare SU**  
Student of Rashtriya College  
of Pharmacy Hatnoor,  
Kannad, Chh. Sambhajanagar  
Maharashtra, India

**Akolkar PB**  
Student of Rashtriya College  
of Pharmacy Hatnoor,  
Kannad, Chh. Sambhajanagar  
Maharashtra, India

**Corresponding Author:**  
**Jadhav Vaibhav N**  
Student of Rashtriya College  
of Pharmacy Hatnoor,  
Kannad, Chh. Sambhajanagar  
Maharashtra, India

## Formulation and evaluation of lip balm incorporating various herbal entities

**Jadhav Vaibhav N, More Sonali R, Magar Puja S, Waghmare SU and Akolkar PB**

### Abstract

Since ancient times, there has been a huge demand for cosmetics. The emphasis has shifted to derived cosmetics these days. Preservatives and heavy metals are two of the dangerous ingredients found in daily lip care cosmetics. Women these days are more concerned with maintaining their beauty, and lipsticks and other lip care products are frequently used to update and attractively sculpt the face. The current lip balm formula enhances facial features and adds a glamorous touch to cosmetics. By coloring the lips and preserving their softness, herbal lip balm enhances their appearance and supports healthy lips. Present-day lip cosmetics rely on the use of massive chemical components that have a range of adverse effects. Lip balms are a product that works for both men and women, regardless of gender. Nowadays, the majority of people use lip balm, and a lot of newer shades are being introduced to the market to meet consumer demand. Because lip balm is applied topically and frequently swallowed, health authorities must cautiously approve it. In addition to providing moisture, lip balm can be used for coloring.

**Keywords:** Herbal lip balm, lip disorder, lip care, moisturizer of lips, coffee lip balm, cosmetics, natural

### 1. Introduction

On the global market, there is currently a growing demand for herbal cosmetics. Worldwide demand for products made from herbs is rising. Nowadays, using herbal products is becoming more commonplace, and individuals are trying to use more herbal remedies to adopt healthier lifestyles. Botanical extracts that promote the health, texture, and integrity of skin and hair are used in a lot of commercial cosmetic formulations. The variety of colors, textures, and sheen tints available has expanded and changed in tandem with the recent increase in product use. An age-old method for enhancing lip beauty and giving face makeup a glamorous touch is lip coloring. This is clear. Products such as lip balm and lipstick are sold in hundreds of colors to satisfy consumer demand. Investigating natural lip balm in-depth was the aim of this endeavor. These products are evaluated for their organoleptic properties, which include color, smell, spread ability, pH, melting point, skin irritancy, and product consistency. One can also judge a product's quality and freshness by looking at its color.

#### 1.1 History of cosmetic science

Ancient Egyptians and Sumerians were among the first people to use cosmetics thousands of years ago. Though attitudes toward cosmetics changed, the use of cosmetics persisted in Europe throughout the middle Ages, when the face was made whiter and the cheeks were made redder. Varied throughout history, with the use of makeup being publicly disapproved of in the West at many occasions. Even though societal perceptions of cosmetics have changed, many people have occasionally used makeup to attain ideals of appearance. Some early significant advancements in cosmetics include the following, per one source:

1. Ancient Egyptians used kohl.
2. Ancient Egyptians also used castor oil as a protective balm.
3. The Romans mentioned using beeswax, olive oil, and rose water to make skin creams.
4. The nineteenth-century use of lanolin and Vaseline (2).

#### 1.2 Anatomy of lips

Speaking, suction, and pretense are all performed by the lips. It is made up of the skin, the superficial fascia, the orbicularis muscle, and the surrounding muscles (mucous membrane and areolar tissue).

There is a dry, red mucous membrane around the lips' edges. Condition where there are lots of touch corpuscles and vascular papillae on the skin the mucous membrane within is reflected by the gums on the upper and lower lips as well as by the two folds of the superior and inferior lips in the middle line. Near the free margin of the lips, the buckle orifice is entirely surrounded by coronary vessels, which are found in the areolar tissue or submucous layer. The superior and inferior coronary vessels unite with their counterpart on the other side to form a small artery that feeds the spectrum arteriaspetinasi<sup>[3]</sup>.

### 1.3 Application of lip balm

1. Lip balms are concoctions that are applied to the lips to shield them from the elements and stop them from drying out. As a product, natural lip balm is meant to be used by both genders.
2. The concentration of the primary ingredient, which includes oil, sand wax, and other excipients, must be balanced in the lip balm.
3. Because users frequently eat away at lip balm, regulators have a microscopic view of the ingredients that go into the product.

### 1.4 Advantages of lip balm

1. Lip balms contribute to preserving the lips' inherent health and beauty.
2. Lip balm products provide protection for lips that are chapped, dry, or prone to cold sores.
3. Research has shown that using sunblock lip balms can shield lips from UV radiation.
4. Neither men nor women cannot use these products because they are not gender specific.
5. Improving the appearance of the face with natural lip cosmetics.
6. Another drawback of using lip balms is that they can become addicted to them.
7. The drawbacks of natural oils include their greasiness and poorer spreading ability.
8. Assist in protecting your lip from wind, dry air, and especially cold temperatures

### 1.5 Disadvantages of lip balm

1. Common components of lip balm made naturally
2. Poor quality ingredients used in lip balms can cause serious damage to the lips. Instead of moisturizing the lips, these lip balms could make them dry.
3. Obtaining naturally derived colors and flavors is more challenging, and there are stability issues with the products as well.
4. An allergic reaction<sup>[4]</sup>.

### 1.6 Lip disorders

#### Swelling

Lip swelling may result from an allergic reaction. The reaction could be brought on by sensitivity to specific foods or drinks, medications, cosmetics, or allergens in the air. The lips usually return to normal once the underlying cause has been found and removed. However, the reason for the enlargement is often still unknown. Recurrent episodes of swelling may be the result of a condition known as hereditary angioedema. Lip swelling can also be brought on by non-hereditary disorders like sunburn, erythema multiforme, cold, dry weather, or trauma.

### Sun Damage

Sun damage has the potential to dry out and make the lips, particularly the lower lip, tough. Damage that raises the risk of developing cancer later on is indicated by red spots or a white, filmy appearance. This kind of damage can be avoided by using lip balm that contains sunscreen or donning a wide-brimmed hat to shield the face from the sun's harmful rays.

### Inflammation

Cheilitis, or inflammation of the lips, can cause pain, irritation, redness, cracking, and scaling in the corners of the mouth. An inadequate intake of vitamin B2 in the diet can cause cheilitis.

### Discovery

Around the lips, freckles and atypical brownish patches known as melanotic macules are typical and can persist for several years. You should not be concerned about these marks. Numerous tiny, dispersed brownish-black spots could indicate Peutz-Jeghers syndrome, a genetic condition that causes polyps to develop in the intestines and stomach. Lip dryness and cracking can be symptoms of Kawasaki disease, an unknown disease that typically affects infants and children 8 years of age or younger.

### Sores

One sign of skin cancer could be a raised spot or a sore on the lip with hard edges. Syphilis or an infection with the oral herpes simplex virus could be the cause of other sores that appear as symptoms. Others, like keratoacanthoma, have an unidentified cause.

### Lip spots

They could appear. Numerous tiny, dispersed brownish-black spots could indicate Peutz-Jeghers syndrome, a genetic condition that causes polyps to develop in the intestines and stomach. Rarely, noncancerous brown spots appear on a smoker's lips in the vicinity of the cigarette's grip. A common condition around the lips are freckles and irregularly shaped brownish areas called melanotic macules, which can last for years<sup>[5]</sup>.

## 2. CGMP as per regulatory authorities

By closely observing drug manufacturers' adherence to FDA's Current Good Manufacturing Practice (CGMP) regulations, the agency ensures the quality of drug products. The minimum standards for the facilities, procedures, and controls utilized in the production, processing, and packaging of a medicinal product are outlined in the CGMP regulations. Rules guarantee that a product is safe to use and contains the ingredients and potency it says it does.

A review of the manufacturer's adherence to the CGMPs is part of the approval process for marketing applications for both new and generic drugs. FDA assessors and investigators make the determination as to whether the company is equipped, has the facilities, and can produce the drug it plans to market<sup>[6]</sup>.

## 3. ICH guidelines regarding stability analysis

### a) Overall thoughts

Stability testing cosmetics is done to make sure a new or altered product fulfills the desired physical, chemical, and microbiological quality standards.

Standards, in addition to practicality and beauty when properly preserved

#### b) The overall stability of a makeup item

Tests should be carried out, whether in real time or under accelerated circumstances, to ensure:

Stability and physical integrity of cosmetics under suitable usage, transport, and storage circumstances stability in terms of chemicals, microbiology, how well the contents and the container work together.

#### c) Creating a stability study for cosmetics

The following factors, each of which will be covered in more detail later, should be taken into account when conducting a stability study.

Determine which tests will "accelerate and predict" the effects of typical usage and storage conditions. When appropriate, take into account stresses such as temperature that will allow for the evaluation of product integrity under conditions expected for product exposure.

Examine important aesthetic attributes like color, scent, texture, and flow, especially after being in environments intended to highlight each one.

Take into account changes in the process conditions. Take into account any effects and how the packaging affects the product that is contained [7].

#### 4. The aim and objectives are as follows

**Aim:** To formulate and assess a lip balm made with different herbal ingredients.

#### Objective

#### 5. Review literature

##### 1. Gudade Gayatri Ashok: Herbal Lotion Review

Ingredients	Quantity [33 gm]	Uses	Quantity (8 gm)
Ghee	2 gm	Moisturizer	0.48gm
Coconut oil	15 ml	Emulsifier	3.63ml
Honey	5 gm	Lighten up of Dark Lips	1.33gm
Coffee	1 gm	Flavoring agents	0.24gm
Vitamin E capsule	5 ml	Antioxidant	1.33ml
Bees wax	5 gm	Moisturizer and Glossiness	1.33gm

#### 8. Information about Ingredients

##### 8.1. Vitamin E

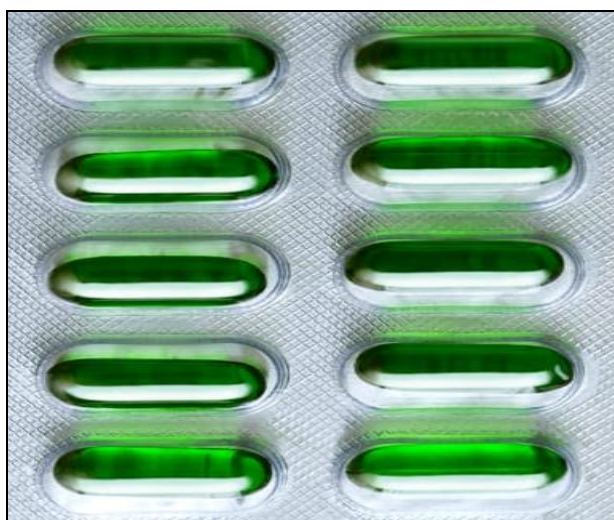


Fig 1: Vitamin E

Herbal cosmetics are created when consumers' desire for herbal products led to the use of natural herbs and their products for their aromatic value in cosmetic preparations, which in turn created a demand for natural products and natural extracts.

#### 2. Chavhan Shankar Parmeshwar, Mr.-Cosmetic Science Review:

Everyday lip care products include dangerous heavy metals and preservatives. These heavy metals and other chemicals have the potential to accidentally enter your mouth in addition to seeping through your lips' pores.

**3. Urwashi Lanjewar:** Introduction and Assessment of Herbal Lip Balm Infused with Papaya and Turmeric: The objective of the study was to create and assess an occlusive layer of herbal lip balm infused with papaya and turmeric to seal in moisture and shield the lips from the elements.

#### 6. Formulation of lip balm

1. Weigh each and every excipient. Put coconut oil, beeswax, and ghee in a beaker.
2. And heat it to between 55 and 60 degrees Celsius in a water bath.
3. To prevent honey from clumping, add honey and vitamin E to a beaker and mix well.
4. Include coffee flavor.
5. Transfer the contents into the receptacle. Using cotton to help, apply glycerin to the container before adding the mixture.
6. Submerge the filled container for thirty minutes in an ice bath (8).

#### 7. Formula of lip balm

Vitamin E is a naturally occurring antioxidant and conditioner. By lessening the symptoms of aging and dry lips, vitamin E contributes to the preservation of the lips' smooth, youthful texture. Vitamin E accelerates the production of new cells on dry lips because it encourages cell turnover and regeneration. Using lip balm helps chapped and dry lips heal more quickly.

**Synonyms:** Tocopherol

**Biological source:** Sunflower oil, Olive oil, Soya, Cereals and cereal products, Nuts.

**Chemical constituents:** Alpha-, beta-, gamma-, and delta-tocopherol and alpha-, beta-, gamma-, and delta-tocotrienol

#### Uses

1. Protects against free radicals
2. Promotes cell regeneration.
3. Contains anti-inflammatory properties.
4. Reduces hyper pigmentation [9].



## 8.2. Bees Wax



**Fig 2:** Bees wax

Beeswax is a thickening agent. Beeswax is used in lip-balm, lip-gloss and hand creams. Beeswax can help to the lips. Beeswax helps retain moisturizing skin. Beeswax is widely used in cosmetic products.

**Synonyms:** Beeswax, Cera-flava.

**Biological source:** Bee comb is the source of this substance. *Apis mellifera*.

**Chemical constituents:** Chief constituent is 80% Myricin (Myricylpalmitate), Cerotic acid, Melissic acid, Ceroleins.

**Family:** Apidae.

### Uses

1. In preparation of ointments, plasters and polishes.
2. Also used in the manufacturing of candles, molds in dental and electronic industries.

## 8.3 Coconut Oil



**Fig 3:** Coconut oil

Coconut oil, sometimes known as coconut butter, is a consumable oil made from the meat, milk, and wick of the coconut palm fruit. Coconut oil is a white solid fat that melts at room temperature, about 25 °C (78 °F). During the summer, in warmer climates, it becomes a clear, thin liquid oil. The unrefined types smell strongly of coconut.

Related terms: Copra oil, coconut butter, and coconut oil.

**Biological Source:** Extracted or expressed from the seed of the coconut palm, *Cocos nucifera*, coconut oil is the fixed oil.

**Family:** Palmae.

**Chemical composition:** At 20 °C, the oil is a semisolid made up of a mixture of glycerides in which 80-85% of the acids are saturated. It is primarily composed of lauric and myristic acid triglycerides.

### Uses

The balanced dietary supplements contain medium-chain triglycerides and coconut oil [10].

## 8.4. Honey



**Fig 4:** Honey

Honey has antiseptic and anti-inflammatory properties that help heal acne outbreaks and stop further infections. Additionally, honey lessens acne's redness and swelling. It removes pollutants from the pores and regulates the amount of dust that collects in the skin's pores. By delivering sustained hydration, it lessens the dryness of the skin. Honey helps to minimize fine lines and wrinkles by moisturizing the skin's outermost layers. Use it as a wound-healing substance.

**Synonym:** Madhu, Honey Purified, Mel

**Biological source:** Honey is a sugary substance secreted by bees (*Apis mellifera*, *Apis dorsata*) and placed in honeycombs.

**Family:** Apidae

### Uses

Sweetening and demulcent substance. Beneficial nutrients for patients and infants. Used as an antiseptic on burns.

## 8.5. Ghee



**Fig 5:** Ghee

Enriched with essential fatty acids, it Ghee on lips helps to nourish dry and chapped lips. Ghee is a natural moisturizer which can penetrate deep into the layers of the skin, providing hydration to the cells. Regular use of Ghee on the lips may help to soften.

**Synonym:** Butter, oil, margarine, oleo.

**Biological source:** Is made from cow milk butter, which is treated with low heat until the water evaporates, leaving behind milk solids. The solids are skimmed off or strained if needed. What remains is only clarified liquid fat.

#### Uses

1. Chapped lips
2. Brightens of skin and lips
3. Regular use of ghee on the lips may help to soften and remove flaky skin <sup>[11]</sup>.

### 8.6. Coffee



**Fig 6:** Coffee

Coffee is a luxurious lip treatment enhanced with coffee extracts from Southern India's hilly Coorg region, which produces some of the best coffee beans in the world. The anti-oxidant and detoxifying properties of Coorgi coffee beans are abundant in this lip balm.

Coffee bean, coffee seed, Arabica coffee, Arabian coffee are some synonyms.

**Source of Biology:** The prepared leaves and leaf buds of *A. sinensis* (Linne) kuntz, which are a member.

**Family:** Theaceae.

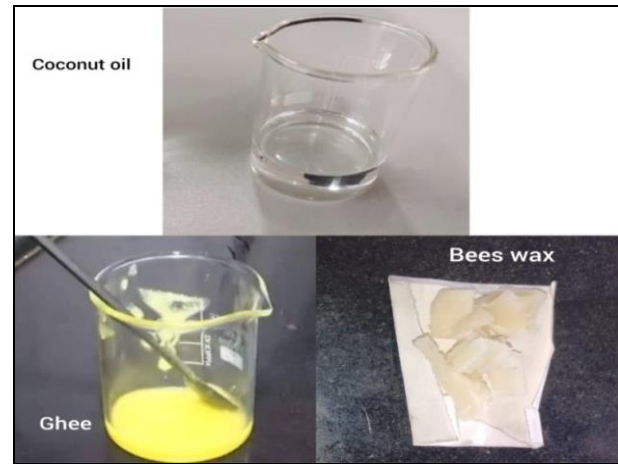
**Chemical Constituents:** The leaves are a rich source of caffeine (1-5%). It also contains the bromine and the ophylline in minor quantities.

#### Uses

1. Anti-Aging Effect.
2. Cellulite Reduction, Improves Blood Circulation, Promotes Collagen Production
3. Help to remove dead and dry skin, is a natural exfoliate and prevent tanning.
4. Reduce pigmentation
5. Nourishes and smoothens of lips <sup>[12]</sup>.

### 9. Method and preparation of lip balm

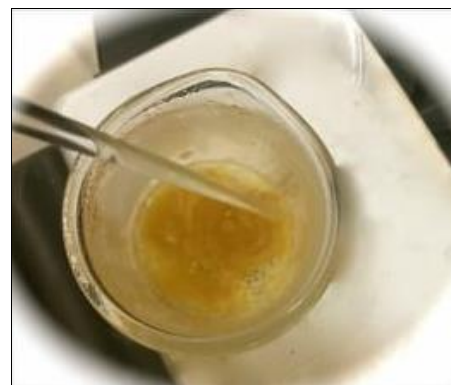
**Step 1:** Take ghee bees wax, and coconut oil in a beaker



**Fig 8:** Step 2, Melt in water Bath temp 55°/60°C



**Fig 9:** Step 3, Add vitamin E, Honey in this beaker



**Fig 10:** Step 4, Add coffee in beaker



**Fig 11:** Step 5: keep in fridge to solidify, apply glycerin container and transferred.



Fig 12: Show lip balm

## 10. Equipment's and instruments

1. Ice bath
2. Weighing Balance
3. Melting point apparatus
4. Autoclave
5. Water Bath
6. Beaker
7. PH meter

## 11. Evaluation Parameters of lip balm

**1. Organoleptic properties:** An examination was conducted into the color, taste, smell, and appearance of lip balm.

- **Texture:** Using the AMETEK Brookfield CT-3 Texture Analyzer as a base, place the formula lip balm sample.
- **Color:** A Konica Minolta CR-400 chromometer was used to analyze the color of lip balm. The brightness, redness, and yellowness of the sample under examination are determined by three readings on this chromatograph [13].

**2. Spread ability test:** This involves applying the product (at room temperature) to a glass slide several times to see if the protective layer forms uniformly and to see if the product breaks, fragments, or deforms while being applied. The spread ability criteria that are employed [14].

G-Good: Perfectly applied, leaves no pieces behind, and keeps the lip balm in its original shape.

I-Intermediate: Consistent, leaves few pieces; proper application causes minimal lip balm deformation.

B-Bad: Intensely deforms lip balm; application is difficult or inappropriate; leaves many fragments.

**3. PH determination:** A digital pH meter was used to ascertain the herbal lipsticks' pH [15].

**4. Skin irritation test:** The product was applied to the back of the palm, and it was left there for 15 minutes [16].

**5. Melting point:** The material was melted to the point of filling duplicate capillaries in order to ascertain the melting point. The capillaries were submerged in water in a vial at a regulated temperature and connected to a thermometer-equipped system. The melting point was determined by measuring the temperature at which the lip balm sample began to melt (Gouvea, 1993) [17].

**6. Stability testing:** Three of the best formulations that exhibited values of all physicochemical properties that were closest to those of the commercial lip balm were chosen, and their stability was carefully examined. For four weeks, lip balms were subjected to a stability test to determine how long they would last at two different temperatures (room temperature,  $27 \pm 1$  °C, and chilled,  $4 \pm 1$  °C). Throughout the stability test period, weekly physicochemical tests were performed to determine the lip balm's pH, color, and texture [18].

## How often is it appropriate to use lip balm?

The majority of professionals advise using it in the following scenarios:-

1. Upon awakening in the morning
2. After consuming food or beverages [19].

## 12. Results and Conclusion

### 12.1. Results

Sr. No.	Evaluation Parameters	Observation
1	Melting point	65°C
2 (a)	Organoleptic properties  colour	Light Brown
(b)	Odour	Pleasant
(c)	Appearance	Smooth
3	Skin irritation	No
4	Spreadability	Excellent
5	PH	6.3

### 12.2. Conclusions

The present work carried out the formulation and evaluation of herbal lip balms was aimed to formulate a lip balm using herbal ingredients with an idea to minimize the side effects which occur by using available chemical based synthetic lip balm. Hence, from the present study it was concluded that this formulated herbal lipstick was better with minimum side effects or no side effects. From evaluation studies, formulation of lip balm using this natural colorant was more satisfactory than marketed formulation.

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