

Formulation and Evaluation of Dragon Fruit Lipbalm

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Date of Submission: 05-12-2025

Date of Acceptance: 15-12-2025

ABSTRACT:- Cosmetics have been incredibly in demand since historical time. These days focus shifted and moved towards naturally derived cosmetic products. Lip balm offer a natural way to promote healthy lips. The Natural Lip balm can be made using naturally occurring base, oils, extract, color and flavoring agents. Quality evaluation is the formulated product and was assessed by using different methods. The Lip balm showed good consistency of color, Spreadability, pH, Homogeneity, non-greasiness during study period of research stability parameters like appearance, fragrance, nature of the formulated Lip balm showed that there was no significant variation during the study period of research. The Lip balm is for the application on lip on stratum corneum.

Keywords:- Dragon fruit extract, Coconut Oil, Bees wax, Orange Oil.

I. INTRODUCTION TO LIP BALM

Lip balm is a wax-like substance that moisturizes our lips and keeps them hydrated. It protects our lips from cold temperatures and dry air that robs moisture. The skin on the lips is thin and lacks oil glands. It makes lips susceptible to dryness. Our lips are the first to show signs of dryness. Products such as lip balms and petroleum jelly prevent lips from drying and chapped lips.

Lip balms usually contain beeswax, camphor, paraffin, acetyl alcohol, and other dyes, fragrances, and flavors. However, skincare brands have realized the importance of using natural ingredients for manufacturing skincare products over time. They have introduced lip care products that do not contain harmful chemicals like sulphates and parabens.

Furthermore, lip care products are now environmental friendly, clean, and cruelty-free. Some of the best lip balms for daily use contain grapefruit and macadamia that offer natural sun protection to your lips and use essential nutrients to moisturize chapped lips.

Benefits of Lip Balms

- If you suffer from dry chappy lips, you need to make sure they are moisturized. Apply a thick coat of your favorite-colored lip balm before going to bed. This will replenish your lips overnight and make them supple and less chapped.
- While applying lip balm is essential in winters, it is equally important to use it in the summers too. The skin on your lips needs protection from the harsh sun rays too. Constant exposure to harmful sun rays can lead to discoloration and also cause your lips to get drier. Use a lip balm with SPF, as this lip balm benefits you in providing your lips with sun protection and hydrates them as well.
- One of the most important lip balm benefits is that it helps your lip makeup glide on super smoothly. If you're someone who uses lipstick on an everyday basis, it is important to hydrate your lips at the end of the day. Your lips can get extremely dry, especially if you use a lot of liquid lipstick. You can even apply a thin layer of lip balm under your lipstick to keep them from drying your lips.



Fig 1: lip balm

Advantages of Lip Balms

- When you need a little glossy boost, sticks of lip balm are an excellent choice. They are easy to carry and allow you to instantly add moisture while on-the-go. They're so effective because they are highly concentrated with lip-soothing ingredients. Since they are void of water, they deliver lubrication directly to your lips. Their formulation also means they do not

need excess preservatives. If you are someone who seeks lip balms that are free from nasty chemicals, this fact will be important to you. Before you buy, look for lip balms that are preserved using essential oils and/or vitamin E.

Besides being lightweight and convenient, the major advantages include:

- **Super concentration:** You can apply less to achieve the same results as alternatives like lotion and petroleum jelly.
- **Faster healing:** The skin on your lips is thinner than elsewhere on your body. The extra hydration allows it to heal more quickly.
- **Plumper look:** Simply applying it can plump up your lips. When they are dry, they actually shrink in size.
- **SPF Protection:** Some lip balms contain SPF protection that shields your lips from sun damage – keeping them healthy and young-looking.

Disadvantages of Lip Balms

Like all products, lip balm has both advantages and disadvantages. However, the disadvantages often occur by choosing the wrong product. The dangers include the following:

- **Allergic reaction** – Some contain allergens that can cause a rash. Ironically, this rash often looks like chapped lips and can be painful.
- **Dangerous chemicals** – Certain lip products include dangerous chemicals that can cause physical damage. Avoid products that use damaging ingredients like paraffin, dyes, petrolatum and phenol. Choose brands with natural ingredients, like all good body care.
- **Contamination** – Some can cause infections if you are not careful to follow best practices. Avoid spreading the balm with your finger unless you carefully wash your hands first. Also, do not share lip balm unless you want someone else's viruses or bacteria. Be sure to dispose of it after a few months or after you've been ill. You should not be using last year's product.

➤ Ingredients used in Formulation of Lipbalm:

Beeswax
Shea butter
Dragonfruitextract
Coconutoil
Orange oil

Dragonfruitcolor

1) Bees Wax

Bees wax is a natural wax produced by honeybees 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. Chemically, beeswax consists mainly of esters of fatty acids and various long chain alcohols. When cold, beeswax is tough and easily breakable, but when heated up, it's a much softer, malleable texture and is used as an emulsifier to help bind cosmetics and skin care lotions.

Benefits of Beeswax on lips:-

- Beeswax seals in moisture and protects against dryness.
- Beeswax has anti-inflammatory properties that can help to soothe chapped or irritated lips.
- Beeswax can help to create a barrier between the lips and the environment, making it ideal for use in windy or cold weather conditions.
- Beeswax gives lip products a smooth texture and a glossy finish.
- Beeswax is a natural substance that is not likely to cause any irritation or allergic reactions.

2) Shea Butter:-

- Shea Butter is a fat extracted from the nut of the African Shea tree. It is ivory in color when raw and commonly dyed yellow with borututu root or palm oil. It is widely used in cosmetics as a moisturizer, salve or lotion. Shea butter is edible and is used in food preparation in some African countries. Occasionally, Shea butter is mixed with other oils as a substitute for cocoa butter, although the taste is noticeably different.
- Shea butter has been used as a cosmetic ingredient for centuries. It has high concentration of vitamins and fatty acids-combined with its easy-to-spread consistency-make it a great product for smoothing, soothing and conditioning your skin.

Benefits of Shea butter:-

- Highly moisturizing
- Anti-inflammatory
- Heals burns
- Protects skin against free radicals
- Natural hair conditioner
- Vitamins A, E and F

- Restores skin elasticity
- Natural SPF
- Softens skin

3) Coconut oil The moisturizing effects of coconut oil have increased general interest in this ingredient as a natural skin care solution. While the oil is sometimes used as an all-over dry skin remedy, it may also be used for the lips. Whether your lips are dry or chapped. Coconut oil is also considered as an emollient. Emollients are non-cosmetic moisturizers that help keep the skin moist, and they're primarily used to protect the skin.

Benefits of Coconut oil:-

- Coconut oil is a natural moisturizer. It locks the moisture of your lips and makes them soft and supple. The oil forms a lipid layer on the skin that decreases water evaporation and the resultant dryness.
- It contains SPF and is, therefore, a natural sunscreen that protects the delicate skin of your lips from harmful sun rays
- The oil is antibacterial and prevents the growth of bacteria and other germs on cracked lips.
- It also soothes your skin and treats chapped lips by reducing inflammation.
- Coconut oil encourages collagen production this aids skin repair and heals damaged lips.

4) Dragon fruit Extract:-

Dragon fruit is a tropical fruit that's low in calories and high in antioxidants. Dragon fruit contains small amounts of nutrients. It's also a decent source of iron, magnesium and fiber. Main Antioxidant contained in dragon fruit:- Hydroxycinnamates, Betalains, Flavonoids. Dragon fruit provide antioxidants and vitamins for healthier skin; your skin may also benefit from a mask containing dragon fruit.

Benefits of Dragon fruit:-

- Collagen Production:- Vitamin C stimulates fibroblasts to produce new collagen, which keeps your skintight and robust.

- Skin Cell Production:- Another fantastic nutrient contained in dragon fruit is Vitamin A, which can help keep your skin looking young and radiant.
- Anti-infection properties:- Vitamin A strengthens our skin by increasing cell development, which protects us from bacteria and pollution.
- Anti-aging properties:- Pitaya is high in antioxidants, which battle free radicals that cause cellular damage and premature aging. Consuming and topical application of Vitamin C- rich super foods and oils like pitaya can be just as important as wearing sunscreen when it comes to preventing UV damage.

5) Orange oil:-

Its inherent anti-inflammatory characteristics, the limonene in orange essential oil, a wonderful, delicious mixture aids in healing dry lips. It also provides hydration and locks in the moisture for nourished and soft lips.

Benefits:-

- Heals dry & chapped lips
- Improves the appearance of dark & pigments lips
- Makes lips softer & plumper
- Adds radiant sheen to lips

Dragon fruit color:-

Red dragon fruit is a potential source of red color for food or cosmetic coloring. Dragon fruit contains high enough natural anthocyanin dyes. Anthocyanin is classified as pigment called flavonoids that can dissolve in polar solvent. Likewise, its barely perceptible taste makes it perfect for coloring products without affecting their taste.

Benefits:

- Rich in antioxidant
- Antibacterial component that is good for health
- Used as colorant for lipstick and Lip balm



**Fig 2: Ingredients used in Formulation of Lipbalm:1. Bees Wax 2.Shea butter
3.Coconut Oil4. Dragon Friut Extract 5. Dragon Fruit Colour**

Batches Formula

Ingredients	Batches F1	F2	F3	F4
Bees wax	15 gm	15 gm	8 gm	8 gm
Shea Butter	16 gm	16 gm	16 gm	16 gm
Coconut Oil	20 ml	15 ml	15 ml	20 ml
Dragon fruit Extract	1.2 ml	1.2 ml	1.2 ml	1.2 ml
Orange Oil	2-3 drops	2-3 drops	2-3 drops	2-3drops
Dragon fruit Colour	2-3 drops	2-3 drops	2-3 drops	2-3 drops

Table 1 :Batches Formula



Fig 3 :Prepared lip balm

SR. NO.	INGREDIENTS	QUANTITY	ROLE OF INGREDIENTS
1.	Bees wax	8gm	Moisture and protect against dryness Anti inflammatory
2.	Shea butter	16gm	Softens skin Heals and prevents chapped lips
3.	Coconut oil	20ml	Hydrates and repairs Retains Moisture
4.	Dragon fruit	1.2ml	Protects from UVA and UVB
5.	Orange oil	2-3 drops	Flavoring agent
6.	Coloring agent	q.s	Coloring agent

Table 2 : OPTIMISED FORMULA USED FOR PREPARATION OF LIP BALM

Evaluation Parameter

(1) Melting point:

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.

(2) Measurement of pH:

You can do this by applying a damp pH strip to the surface of the lipbalm for a few minutes, or by dissolving the lipbalm in a solvent and then adding water and reading the pH, or by melting the lipbalm, homogenizing with water, and then checking the pH.

(3) Stability studies:

Stability of drug can be defined as the time from date of manufacture and the packaging of the formulation, until its chemical or biological activity is not less than a predetermined level of labeled potency and its physical characteristics have not changed appreciably. The purpose of stability testing is to provide evidence on how the quality of a drug substance or drug product varies with time under the influence of variety of environmental factors such as temperature, humidity and light, enabling recommended storage conditions and shelf-lives. Stability studies were carried out for 1 month/ 30 days at room temperature (25.0 ± 3.0 °C), refrigeration (4 ± 2.0 °C) and oven temperature (40.0 ± 2.0 °C).

(4) Test of spreadability:

The test of spreadability consisted of applying the product at 4 °C, 22 °C and 40 °C 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.

II. RESULT AND DISCUSSION

(1) Organoleptic characteristics

PARAMETER	OBSERVATION
COLOUR	Light Pink
APPEARANCES	Smooth, Excellent
ODOUR	Orange Flavor

Table 3 : Organoleptic characteristics

(2) Melting Point:

Melting point Melting point of lip balm was found to be in the range of range of 70 °C which matches with appropriate melting point of between 65 °C and 75 °C.

(3) Test of Spreadability:

Prepared lip balm initially has shown, G - Good: uniform, no fragmentation; perfect application, without any deformation at room temperatures.

(4) Measurement of pH:

PH of lip balm was near to neutral pH i.e. 7.2 this would not cause any irritation to lips.

(5) Stability studies:

Stability studies were carried out for 1 month/ 30 days at room temperature (25.0 ± 3.0 °C), refrigeration (4 ± 2.0 °C) and oven temperature (40.0 ± 2.0 °C). All results are presented in the table.

PARAMETER	BATCHES				
	Specifications	F1	F2	F3	F4 (Optimized Formulation)
COLOUR	Light Pink	Light Pink	Light Pink	Light Pink	Light Pink
ODOUR	Orange Oil	Orange Oil	Orange Oil	Orange Oil	Orange Oil
MELTING POINT	65 C	75 C	70 C	60 C	65 C
TEXTURE / APPEARANCE	Smooth	Stiff	Stiff	Liquidy	Smooth
WASHABILITY	Easily Washable	Not Easily	Not Easily	Washable	Easily Washable
SPREADABILITY	Good Spreadability	Not Good	Medium	Medium	Good Spreadability
PH	5.6 to 6.8	5.3	5.5	5.5	6.4

Table 4 :Stability studies of lip balm

Spreadability of Lip Balm



Fig 4 :Spreadability of Lip balm on 4 °C, 24 °C and 40 °C Respectively.

III. CONCLUSION

Lip balms are essential skin care products that keep your lips soft and moisturized. Active Ingredient used in the formulation of lip balm is Dragon Fruit Extract. Dragon Fruit (Pitaya) has beneficial potential for human health, having antioxidants, anti-inflammatory, anti- bacterial and Anti-fungal properties. This lip balm is used to provide an occlusive layer on the lips surface to retain moisture in lips and protect them from external exposure like UVA and UVB rays and prevents sun burn. The formulated lip balm showed good results including consistency, Spreadability, ph., homogeneity, non-greyness and SPF. The melting point shows a range up to 50 ± 2 °C

temperature of lip balm shows better stability. During the stability test, the developed formulation of dragon fruit lip balm exhibited an appropriate melting point (means 68 ± 2 °C). According to the Spreadability test results, storage in the oven (means more than 40 ± 2 °C) was not recommended because of loss of product functionality observed during the normal 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. The natural ingredients used inside it do not show any side effects. This Lip balm is just as effective at hydrating and protecting your lips as

conventional Lip balms. They are easy to carry and instantly add moisture. It was concluded that herbal lip balm can be better option for treatment of various lip issues.

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