



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Formulation and Evaluation of Lipbalm

Gitte Nikita Govindrao

B. Pharm final year

Kishori college of pharmacy, Beed

Abstract

The lip care products for everyday basis contain harmful heavy metals and preservatives. Other than leaching through the pores on your lips, these heavy metals and other chemicals can also be accidentally ingested. Lead affects heart and brain, Cadmium and Chromium can cause cancer, Preservative could cause breast cancer. Lip balms are formulations applied onto the lips to prevent drying and protect against adverse environmental factors. Organic lip balms nourishes the lips and help to get hydrated and protect lips affected by chapping and dryness. They help to protect the natural health and beauty of the lips. Lip balms are not gender specific products and both men and women can use them. In the present study many organic products like Ghee and Honey, can help to keep lips hydrated and healthy. Prepared lip balm was evaluated for organoleptic characteristics, melting point, spreadability, pH measurement and stability studies. After performing stability studies at room temperature (25.0 ± 3.0 °C), refrigeration (4 ± 2.0 °C) and oven temperature (40.0 ± 2.0 °C) for 30 days. It was concluded that prepared lip balm shows uniform nature, perfect application, without any deformation at room temperature (25.0 ± 3.0 °C) and at refrigeration (4 ± 2.0 °C). Mean melting point was 69 °C. Mean pH was 7.2, which is near to the neutral pH. Storage in the oven (40.0 ± 2.0 °C) is not recommended because of loss of product functionality observed during the normal Stability. Organic lip balm can be a better option for treatment of various lips issue.

1.Introduction

Due to increasing public concern, on the presence of hazardous synthetic excipients in cosmetics, new techniques are gained to produce products using organic sources. Chapped, dry or cracked lips are very common beauty dilemma, particularly in harsh weather. Lips have no oil glands, so they really need that extra moisture and protection throughout the day. Many people deal with dried-out lips during the winter, but the problem can continue in sunny seasons, too. Conventional lip balms often contain petrolatum, synthetic waxes, alumina, parabens, hydrogenated oils and artificial fragrances and colours which are toxic. Lip balms are often eaten away by the user and hence it is imperative that health regulators have a microscopic look at the ingredients that go in to the lip balm. The dyes that contribute to the color of the lip balm are dangerous to humans on consumption. Lips contain little melanin, which provides some protection from the sun. Although many organic products like Ghee, Honey, vitamin E can help keep lips hydrated and healthy when used as part of a larger regimen Organic word is the symbol of safety in contrast to synthetic one which has adverse effects on human health. Cosmeceuticals are cosmetic products with biologically active ingredients purporting to

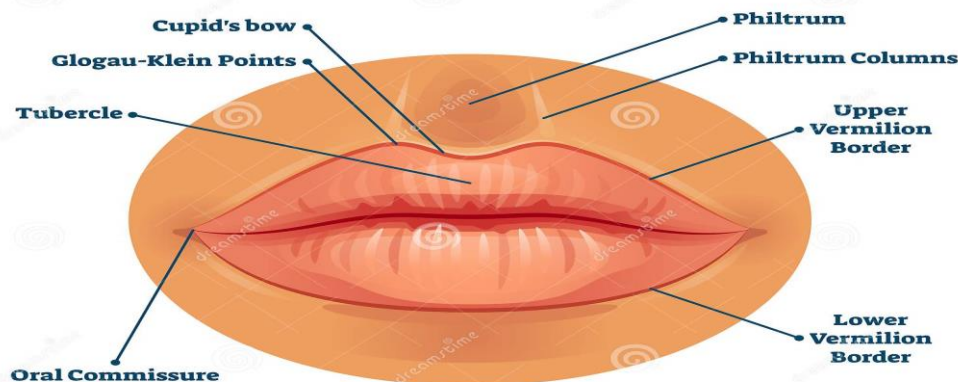
medical or drug like benefits. These ingredients have medicinal properties that manifests beneficial topical actions and provides protection against degenerative skin condition. The present work was carried out by us to formulate organic lipstick having less side effects. Products that are used to protect lips rather than decorate them are known as lip balms. They form an adherent, flexible, moisture resistant film of oily substances. Usually they do not contain dye .Honey helps to lighten up the dark lips. Honey is rich with bleaching action that generally removes the darkness of the lip skin. It is also high in antioxidants that help repair daily UV damage. Ghee contains essential fatty acids that help condition and nourish dry and chapped lips. The application of pure ghee on chapped lips will help to cure the problem of cracked lips as well as discoloured lips with quick effects. Beeswax is a natural compound secreted by female bees that is often used in cosmetics, particularly lip balm. This substance is very moisturizing, can help protect the lips from the harmful rays of the sun, and has a pleasant smell. Beeswax act as a natural emulsifiers. Castor oil penetrates deep into the skin tissue and its fatty acids help to moisturize the lips. The anti-inflammatory properties of castor oil reduce redness and pain associated with chapped and sunburnt lips. Vitamin E is an antioxidant and a natural conditioner.Vitamin E helps to maintain the soft, youthful texture of your lips by reducing the signs of aging Stability studies are useful as a screening tool for all potential manifestations of instability of a formulation, even if they never occur under conditions of product use. Furthermore, possible changes in the product can be identified before it is released for use by consumer.

Keywords- Lip balm, Lips, Beetroot, Formulation, Natural ingredients.

2. Anatomy of lips

The lips serve as organs of prehension, 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 superioris and inferioris The areolar tissue or submucous 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 hemorrhage . The superior labial or coronary vein begins as a plexus in the orbicular is 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 submucous layer of the lips around the orifice of the mouth. They secrete a mucous fluid. Mucous retention cysts develop when the ducts of these glands become occluded .

ANATOMY OF THE LIPS



dreamstime.com

ID 190053685 © VectorMine

Lips disorder

(2.1) Swelling:

An allergic reaction can make the lips swell. The reaction may be caused by sensitivity to certain foods or beverages, drugs, lipstick, or airborne irritants. When a cause can be identified and then eliminated, the lips usually return to normal. But frequently, the cause of the swelling remains a mystery. A condition called hereditary angioedema may cause recurring bouts of swelling. Nonhereditary conditions such as erythema multiforme, sunburn, cold and dry weather, or trauma may also cause the lips to swell.

(2.2) sun damage :

sun damage may make lips especially lower lip, hard & dry red speckles or white filmy looks single damage that increase s the chance of subsequent cancer this type of damage can be reduced by the covering of lips with Lipbalm with containing the sunscreen.

(2.3) Immflamation :

the Immflamation of lipscorners of the mouth may become painful, irritated, red, cracked, and scaly. Cheilitis may result from a deficiency of vitamin B2 in the diet.

(2.4) Discoloration:

Freckles and irregularly shaped brownish areas (melanotic macules) 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

(2.5):Sores :

A raised area or a sore with hard edges on the lip may be a form of skin cancer. Other sores may develop as symptoms of other medical conditions, such as oral herpes simplex virus infection or syphilis. Still others, such as keratoacanthoma, have no known cause .

3.Application of Lip Balm :

- Lip balms are formulations applied onto the lips to prevent drying and protect against adverse environmental factors. Numerous lip balms of chemical origin are currently available in the market from companies like The body shop, Nivea, Himalaya, Blistex, etc.
- The cosmetic literature reports limited data on this type of formulation, although references related to lipstick apply because it is a cosmetic form similar to lip balm. This similarity extends to include organoleptic and stability requirements such as resistance to temperature variations, pleasant taste, innocuousness, smoothness during application, adherence and easy intentional removal .
- Lip balm should not be considered equivalent to the lip gloss, with the former being a product intended for use by both men and women . To formulate lip balms, it is necessary to balance the concentration of the main ingredients including butters, oils and waxes and other excipients .Many people seek weekly facials, daily skin scrubs, anti-aging lotions, and many other products to ensure they have healthy and glowing skin.
- But with all the attention being given to healthy skin, lip care is largely forgotten natural offers the natural way to maintain and to promote healthy lips. Lip Lip balms are often eaten away by the user and hence it is imperative that health regulators have a microscopic look at the ingredients that go in the lip balm . The dyes that contribute to the color of the lip balm are dangerous to humans on consumption.

- **Types of lip balms :-**

1. UV filter lip balm :-

This sort of lip balm can be used all year long, but it is especially beneficial in the summer or when visiting an area with more solar activity.(e.g. mountain ski resorts).

2. Nourishing lip balm :- This type works best in winter.

3. Moisturizing lip balm :-Your lips may split if you use this lip balm in the cold since it absorbs too quickly. For dry lips, this kind of lip balm is beneficial. You can use moisturising lip balm all year long.

4. Medicated lip balm :- It should be applied with care. It acts as a softening and antiseptic medication.

5. Tinted Lip balm :-You can wear tinted lip balm year round .

4. Advantages and disadvantage of lip balm

(4.1) Advantages of Lipbalm

- Lip balms help to protect the natural health and beauty of the lips.
- Sun block lip balms are proved to prevent ultraviolet rays from hurting the lips.
- They are not gender specific products and both men and women can use them.
- Lip balm products help to protect lips affected by cold sores, chapping and dryness.
- Contact of the product with the skin will not cause a sensation of friction or dryness, and should allow the forming of a homogeneous layer over the lips in order to protect the labial mucous susceptible to environmental factors such as UV radiation, dryness and pollution.
- It refreshed, renewed and also addresses lip-related symptoms resulting from colds, flu and allergies.
- The use of natural lip cosmetic to treat the appearance of the face and condition of the skin .

(4.2) Disadvantage of lipbalm

- made up of low quality of ingredient can harm the lip seriously such lips may dry out the lips instead moisturizing it.
- addiction is another disadvantage usually seen with the use of them
- Compared to commercially-prepared lip balms, homemade lip balms tend to stay on the lips for a shorter duration of time. Thus need to reapply often.
- Some companies manufacture lip balms considering only the beauty aspect, ignoring the health benefits and soft character of the skin. Such products will gradually damage the natural color, softness and glow of the lips.
- The naturally derived colors and flavours are more difficult to obtain and also have issues related to stability in the products
- Natural oils have other disadvantages such as greasier, comedogenic, and less spreadability

5. Difference between lip and regular skin structure

The lips are more attractive than the regular skin. Generally the top corneum layer of regular skin has 15 to 16 layers mainly for protection purpose. The top corneum layer of the lip contains about only 3 to 4 layers and very thin compared to typical face skin. The lip skin contains very few melanin cells. Because of this, the blood vessels more clearly appear through the skin of the lips that gives a lovely pinkish color of the lips. The lip skin has no hair follicle and no sweat glands. Therefore it does not have the sweat and body oil in protecting the lip from outside environment .

- **Material and Methods**

Beeswax was purchased from Loba Chemie Pvt. Ltd., Almond oil (Bajaj Almond drops®), Aloevera juice organically extracted from ., Cap.Vitamin .

6.Preparations of ingredient

(6.1).Aloe vera GEL :

The leaves of Aloe vera were collected, washed with water ,the thick epidermis was selectively removed and the inner gel-like pulp in the center of the leaf was separated with a spoon, minced, and homogenized in a mixer.



Figure no. 1 : - Aloevera gel

(6.2) Vitamin E capsule

Vitamin E is a fat-soluble antioxidant with anti-inflammatory properties and is often added to various skincare products such as creams, oils and lip balms and lipstick for effective free-radical protection, hydration and smooth skin.



Figure no. 2 :- vitamin E capsule

Vitamin E is a fat-soluble antioxidant with anti-inflammatory properties and is often added to various skincare products such as creams, oils and lip balms and lipstick for effective free-radical protection, hydration and smooth skin.

(6.3) beeswax

Wax form an important group of ingredients for the manufacture of personal care products and decorative cosmetics. Waxes are used in different industries and products. They are predominately used in candles, but also find important applications in food, cosmetics and pharmaceutical industries as thickeners/emulsifiers. Chemically, waxes are complex mixtures of hydrocarbons and fatty acids combined with esters. Waxes are harder, less greasy and more brittle than fats. They are very resistant to moisture, oxidization and bacteria.



Fig no 3 . : Yellow beeswax

(6.4) Oils

Oils and fats are differing in their physical forms; generally the latter are solid at room temperature. Both fats and oils are chemically glycerol esters composed of glycerol and fatty acids and are also called as triglycerides. Fatty acids can be saturated or unsaturated, thereby determining the stability and property of the oil. Oils with a high degree of saturated fatty acids (lauric, myristic, palmitic and stearic acids) include coconut oil, cottonseed oil, and

palm oil. Oils with a high degree of unsaturated fatty acids (oleic, arachidonic, linoleic acid) are canola oil, olive oil, corn oil, almond oil, safflower oil, castor oil and avocado oil. Saturated oils are more stable and do not become rancid as quickly as unsaturated oils. However, unsaturated oils are smoother, more precious, less greasy, and better absorbed by the skin. Natural butters like shea butter, avocado butter or cocoa butter are not true butters but natural fats. In general, natural butters are excellent emollients and thickeners and dependent on the type may have various additional properties .

Almond oil

This almond lip cream uses natural almond oil, vitamin E oil and castor oil. It's a natural product brought directly from the deep trees for you. It softens.

Figure no. 4 :- almond oil**(6.5) Honey**

Yes, honey is good for chapped lips and dry lips, too. It has antimicrobial, anti-inflammatory, and wound healing properties. Honey is a natural humectant, which means it attracts and retains moisture, keeping your lips hydrated throughout the day. Honey also has anti-inflammatory properties to help soothe chapped lips. Honey's antibacterial properties also help to prevent infection if the lips become cracked.

**Figure no. 5 :- honey**

6)Flavaring agents:

Rose water moisturises your lips and makes them pink and plump. All you need to do is take some rose water on a cotton pad and dab it over your lips. Then, apply a good layer of lip balm. Voila, you have your soft pink lips.



Figure no. 6:- rose water

6.7)Ghee

The best way to use ghee for chapped lips is by preparing a simple homemade lip balm. Just take 5 teaspoons of ghee and heat it up and add in 1 teaspoon honey, mix it nicely. Pour this mixture in a container and apply it after gently scrubbing your lips with a sugar and honey mixture



Figure no. 7 :- ghee

7. Formulation of lipbalm

Weigh all the excipients. Add ghee, beeswax, almond oil in beaker and melt it in water bath at 55-60°C. Add honey and vitamin E into beaker and mix vigorously so that honey will not clump. Add vanillin flavour. Pour the content into the

lipstick moulds. Before pouring the mixture in lipstick moulds; on the mould applying glycerine with the help of cotton. Put the filled mould into the ice bath 10 min.

Ingredient	Quality	Uses
Bees wax	5%	Impart glossiness & hardness. Moisturizer.
Ghee	2%	
Almand oil	15%	Emulsifier.
Honey	5%	
Rose water	0.08%	Lighten up & darken lip. Flavouring agent.
Vitamin E	5%	
Alovera gel	5%	Antioxidant & maintain the stability.
		Softlips

Table no. 1 :- formulation of lipbalm

8. Evaluation of lipbalm

The performance of a lip balm product can be used to judge its quality. There are several reasons why evaluation parameters are important for any product. Along with the product's consistency and purity, it helps to preserve stability. This section provides a description of the primary evaluation criteria for lip balm products. From the standpoint of the user, the aesthetics of cosmetic items are quite important. This comprises the product's colour, flavour, and texture.

8.1) Spreadability Test :-

By applying lip balm to a glass slide, spread-ability analysis was performed, and any deformation and breakdown were assessed in accordance with Fernandes et al[19] .’s explanation.

The analyst defined the following standards for this test:

G – Good: consistent, doesn’t leave pieces, flawless application, doesn’t cause the lip balm to deform;

I – Intermediate: consistent, few fragments are left behind, proper application, and minimal lip balm deformation;

B – Bad: Lip balm is severely deformed; application is difficult or improper; and there are numerous fragments left

behind.

8.2) Hardness Analysis :-

For this investigation, the AMETEK Brookfield CT3 Texture Analyzer was used to analyse hardness. This test was run to evaluate the lip balm’s hardness. Because Probe TA 39 is the most appropriate Probe to Measure Lip Balm’s Hardness [22], it was used.

8.3) Skin Irritation Test :-

It is carried out by applying lip balm on the skin for 10 minutes[23]

8.4) PH parameter :-

Measurement: To determine the pH, 1 g of sample was dissolved in 100 ml of water. A pH metre was used to measure pH

8.5) Organoleptic properties :-

Organoleptic characteristics of the lip balm, such as colour, odour, taste, and appearance, were examined.

8.6) Melting point :-

The substance was made molten to fill capillaries in order to ascertain the melting point (duplicate). The capillaries were connected to a thermometer-equipped device and submerged in a vial of water that was kept at a set temperature. The melting point of a lip balm sample was defined as the temperature at which melting occurred

8.9) Breaking point :-

The strength of Lipbalm was assessed using the breaking point method. The lip balm was positioned inch from the edge of the support and held horizontally in a socket. The weight was increased progressively by a predetermined amount (10 gm) at predetermined intervals of 30 seconds, and the weight at which it broke was regarded as the breaking point.

9.Result

Evaluation parameter	Observed value
Melting point	63 °c – 65°c
Organileptic properties	
Colour	White
Odour	Plasant
Appearance	Smooth
Test of spreadability	-
pH meter	6.0
Skin irritation	No
Breaking point	29gm

Table no. 2 :- Evaluation of lipbalm

8. 10)Test of spreadability

- It was observed that the lip balm at room temperature ($25.0 \pm 3.0^{\circ}\text{C}$) and refrigerator ($4.0 \pm 2.0^{\circ}\text{C}$) showed; Good: uniform, no fragmentation; perfect application, without deformation of the lip balm, but Intermediate: uniform; leaves few fragments; appropriate application; little deformation of the lip balm at oven temperature ($40.0 \pm 2.0^{\circ}\text{C}$).

Spreadiability of lipbalm :-

By applying lip balm to a glass slide, spread-ability analysis was performed, and any deformation and breakdown were assessed in accordance

Figure no9. -: spreadiability of lipbalm



10 Conclusion-

The formulation stored at room temperature and refrigerator showed same stability behaviour. The organoleptic characteristics were stable and spreadability was found to be "Good". Storage under these conditions was considered to be adequate, because the product functionality was maintained.

During the stability test, the lip balm made from natural ingredients showed and appropriate melting point (mean of 64°C). According to the test of spreadability, the storage condition of oven (40.0± 2.0°C) is not recommended because of loss of product functionality when compared with the normal stability test.

It was concluded that lip balm made from natural ingredients is safe to use and this combination proved to be better option in formulation of a lip balm. By alteration of the excipients or further combinations of the excipients can result in a new formulation with a different and enhanced quality. From the current studies it was predicted that the formulation will remain stable.

11)References-

- Christopoulos A, Mouth anatomy <https://emedicine.medscape.com/article/1899122-overview> Sep 11, 2018.
- B.H. Ali, N.A. Wabel, G. Blunden, Phytochemical, pharmacological and toxicological aspects of *Hibiscus sabdariffa* L.: a review. *Phytother Res.* 19 (2005) 369-375.
12. M.S. Balsam, E. Sagarin, *Cosmetics science and technology*, Second ed. Wiley Interscience Publication, NY, USA, 2008, 3, pp. 209-512.
- Fernandes AR, Dario MF, Stability evaluation of organic lip balm. *Brazilian Journal of Pharmaceutical Sciences*, 2013: 49; 293-300.
- Kadu M, Singh V. Review on natural lip balm *International Journal of Research in Cosmetic Science* 2015; (1): 1-7.
- Mayuri Kadu, Dr Suruchi Vishwasrao, and Dr Sonia Singh, A Review on Natural Lip Balm. *International Journal of Research in Cosmetic Science*. 03 August 2014. ISSN 2277-7172.
- A.R. Fernandes, M.F. Dario, C.A.S.O. Pinto, T.M. Kaneko, A.R. Baby, M.V.R. Velasco, Stability evaluation of organic Lip Balm, *Braz. J. Pharm. Sci.* 2 (2013) 49.
- Savalkar M.B. et al. Formulation & Evaluation of Herbal lipstick using *Amaranthus dubius*, *J. Pharm. Res.*, 2018, 7(6), 96-98.
- P. L. Kole, H. R. Jadhav, P. Thakurdesai, A. N. Nagappa, Cosmetic products of herbal extracts, *Natural Product Radiance*. 4 (2005) 4.
- Grindlay D, Reynolds T. The Aloe vera phenomenon: A review of the properties and modern uses of the leaf parenchyma gel. *J Ethnopharmacol.* 1986; 16:117-51.
- Kokate CK, Purohit AP, Gokhale SB. *Textbook of Pharmacognosy*. 49th ed. Pune: Nirali Prakashan, 2014.
- Abdul Wadood Khan, Sabna Kotta, Shahid Hussain Ansari, Rakesh Kumar Sharma, Amit Kumar and Javed Ali, Formulation development, optimization and evaluation of aloe vera gel for wound

healing. Pharmacogn Mag. 2013 Oct-Dec; 9(Suppl 1): S6–S10. doi: 10.4103/0973-1296.117849

13. Mona Patel, Ojash Patel, formulation and evaluation of herbal lipstick using beta vulgaris extract.

International ayurvedic medical journal. June 2021.

14. S. Deshmukh, M. Chavan, M. Sutar, S. Singh, Preparation and evaluation of natural lipsticks from bixa orellana seeds, Int J Pharm Bio Sci. 4 (2013) 139-144.

15. GOUVEA, M.C.B.L.F. Desenvolvimento de base de batons. Cosmet. Toiletries (Portuguese edition), v.5, n.2, p.49-56, 1993.

16. Sharma PP, cosmetics- Formulation, manufacturing and quality control, Edn 5. Vandana publications, Delhi, 2008, 297-313.

17. H. Ratih, H. Titta, C.P. Ratna, Formulation of Cananga Oil Lip Balm as Emolient". Prosiding Simposium Penelitian Bahan Obat Alami (SPBOA) XIV dan Muktamar XII PERHIPBA 2014.

Yogyakarta: Leutikaprio. p. 3, 2014.

18. P.P. Sharma, "Cosmetics-Formulation, manufacturing and quality control", fourth ed. (2008). Vandana Publications Pvt. Ltd., India.

19. H. I. N. Nasution, "Formulation of Lip Balm using Combination of Palm Kernel Oil (PKO) and Red Palm Oil (RPO) as Lip Moisturizer," Final project, Universitas Sumatera Utara, 2018.

20. BRASIL. Ministério da Saúde. Agência Nacional de Vigilância Sanitária. Séries Temáticas: Qualidade 1. Guia de Estabilidade de produtos cosméticos. Brasília, v.1, 2004. 45 p.