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“FORMULATION AND EVALUATION OF HERBAL LIP BALM”

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Abstract: Lip balm or lip salve is a wax-like substance applied topically to the lips to moisturize and relieve chapped or dry lips, angular cheilitis, stomatitis, or cold sores. Lip balm often contains beeswax, Beetroot juice, Carrot juice, Ghee, Honey, and Cocoa Butter, among other ingredients. Some varieties contain dyes, flavour, fragrance, phenol, salicylic acid, and sunscreen. Design, formulation and quality improvement of lip balm made from natural ingredients for tropical lip health use was studied. The lip balm was produced by mixing method until homogeneous. The effect of temperature was also observed from 25 to 100 °C to obtain a lip balm with a homogeneous texture and safe. The parameters such as formulation, chemical stability, pH, melting point and irritation tests were carried out to obtain the best lip balm products and are suitable for use in the tropical regions. The lip balm formulation was tested by applying lip balm to a glass slide. The pH of lip balm of 6 and melting point of 65°C were obtained. Based on the results of irritation test, the lip balm showed no reaction to erythema, papules, or edema, indicating that it is safe to skin of the lips. Finally, the natural ingredients in this study can be used for the formulation and composition of lip balms for tropic to cool regions. The primary purpose of lip balm is to provide an occlusive layer on the lip surface to seal moisture in lips and protect them from external exposure.

Keywords: Lotus extraction, Carrot juice , Moisturising

1.INTRODUCTION

Due to the presence of hazardous synthetic excipients in cosmetics, there has been a more public demand regarding the use of organic sources. Lips do not have any oil glands so, it is really important to give that more moisture and protection throughout the day. Conventional lip balm often carries petrolatum, synthetic waxes, alumina, paraben, hydrogenated oils and artificial fragrances and colours which are toxic. Often the lip balm is eaten by the user, so it becomes huge issue for health regulator.

Cosmetics are majorly in demand since historical time. These days concentrate shifted more towards naturally derived cosmetic products. Among all cosmetic products, lip balm formulations are more widely used to improve the beauty of lips and add glamour touch to the makeup. Lip balms gives a natural way to maintain and promote healthy lips. Recent cosmetic lip products are based on use of enormous chemical ingredients with more side effects. Beeswax is a natural compound secreted by female bees that is often employed in cosmetics, specially lip balm. This ingredient is very moisturizing, can help protect the lips from the sunburn, and has a pleasant smell. Beeswax used as a natural emulsifier. Vitamin E is an antioxidant and a natural conditioner. Vitamin E helps to maintain the soft, youthful texture of the lips by lowering the signs of aging. Rose oil penetrates deep into the skin tissue and its fatty acids help to moisturize the lips. The anti-inflammatory properties of almond oil lower redness and pain associated with chapped and sunburnt lips. Ghee has anti-inflammatory properties that fight irritation. It infuses the lips with antioxidants that fight wrinkles and other forms of skin damage. Beetroot is rich in antioxidants that helps the lips soft, supple and maintain the elasticity of the skin¹⁻⁴.

ANATOMY OF LIP⁵⁻⁸

The lips act as organs of prehension, suction and speech. It is connected of the skin, superficial fascia, orbicularis muscle and the muscles inserted around it. The margins of the lips are enclosed with dry, red mucous membrane, constants 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 that totally encircle the buccal orifice near the free margin of the lips.

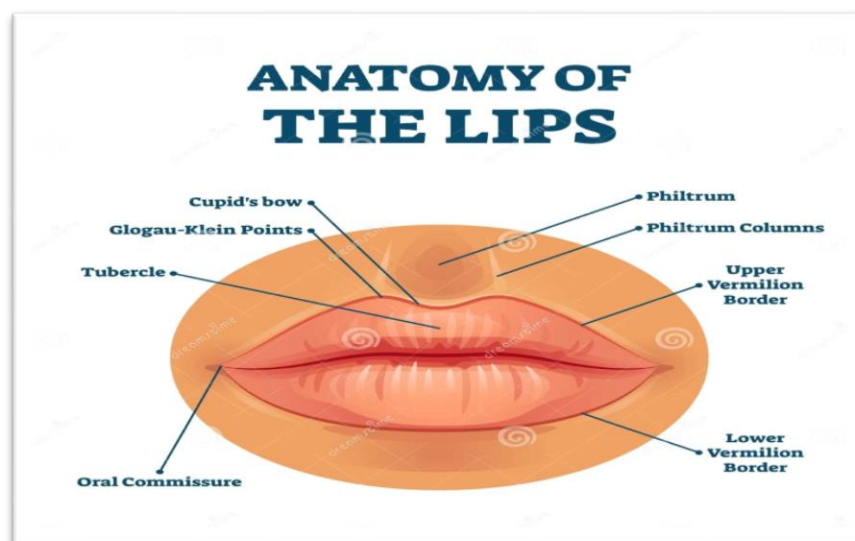


Fig.1 Anatomy of Lips

The coronary vessels are the superior and inferior coronary arteries that arise from the facial. The superior coronary is larger than the inferior, and anastomoses with its fellow of the other side and helps off a small artery to the septum arteriaseptinasi. contract of this artery will sometimes control nasal hemorrhage.

The coronary vein starts as a plexus in the orbicular is muscle of the upper lip, passes with the coronary artery and drains into the facial vein a small below the alae of the nose of the veins that drain the lower lip the inferior coronary empties into the facial a little below the superior labial; but the major branch from the lower lip descends as a rule to the submental vein, thence to the facial or many times to the anterior jugular.

LIP DISORDER⁹

Swelling: An allergic reaction can form the lips swell. The reaction may be occurs by sensitivity to certain foods or beverages, drugs, lipstick, or airborne irritants. When a cause can be detected and then removed, the lips generally back to normal. But frequently, the cause of the swelling remains a mystery. A disease called hereditary angioedema may cause recurring bouts of swelling. Nonhereditary diseases like erythema multiforme, sunburn, cold and dry weather, or trauma may also make the lips to swell.

Sun Damage: Sun damage may make the lips, particularly the lower lip, hard and dry. Red speckles or a white filmy look signal damage that more the chance of subsequent cancer. This type of damage can be removed by covering the lips with a lip balm containing sunscreen or by shielding the face from the sunburn with a wide-brimmed hat .

Inflammation: With inflammation of the lips, the corners of the mouth may make painful, irritated, red, and scaly. Cheilitis may cause from a deficiency of vitamin B2 in the diet.

Discoloration: Freckles and irregularly shaped brownish areas (melanotic macules) are general around the lips and may last for more years. These marks are not cause for concern. Multiple, small, scattered brownish black spots indicates sign of a hereditary disease called Peutz-Jeghers syndrome, in which polyps make in the stomach and intestines. Kawasaki disease, a disease of unknown cause that commonly 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.

Sores: A raised area or a sore with hard edges on the lip may be a form of skin cancer.

Other sores may form as symptoms of other medical conditions, such as oral herpes simplex virus infection or syphilis. Still others, like keratoacanthoma, have no known cause.

PURPOSE AND HISTORY OF LIPBALM¹⁰⁻¹² :

Purpose:

The purpose of all lip balm is to protect the lips. They contain a moisturizing ingredient that prevents water loss. Wax is added to help lip balm stick to lips.

History:

Lip balm was first marketed in the 1880s by Charles Browne fleet, though its origins may be traced to earwax. More than 40 years prior to the commercial introduction of lip balm by fleet, Lydia maria child recommended earwax as a treatment for cracked lips in her highly-popular book, the American.

II. REVIEW OF LITERATURE ¹³⁻²⁶

H Anisa, Y Sukmawardani and N Windayaniv , A simple formulation of lip balm using carrot extract as a natural coloring agent Journal of Physics : Conference Series.

Carrot :

The formulations using a lip moisturizer carrot extracts as natural dyes do not change color, odor, and texture, homogeneous structure, and does not cause skin irritation.

Rutuja Babanrao Tijare, Siddhi Sachin Wargantiwar, Steffi George, Deepali Raju Shastri, Meenal Raju Watkar , Formulation of tinted lip gloss from lotus flower and date seed oil , Magna Scientia Advanced Biology and Pharmacy.

Lotus :

Constant and continuous efforts by researchers have claimed lotus having numerous pharmacological activities like anti-inflammatory, antifungal, antibacterial, antipyretic, antiviral, antioxidant, hypoglycemic, anti-cancer activities.

Anuj N.Nahata, Shivani Nahar, Sanjay G. Walode, Vibhavari M. Chatur : Formulation and Evaluation of Lip balm Prepared Using Various Herbal Entities : International Journal Of Creative Research Thoughts (Ijert)

Bees Wax :

Beeswax is also an occlusive, meaning it forms a moisturizing, protective layer on the surface of the lips. Beeswax helps heal lips and prevent infections. Beeswax has anti bacterial and anti-inflammatory properties that can help prevent and relieve infections around your lips, along with vitamin A which helps to improve wound healing.

Mayuri Kadu, Dr Suruchi Vishwasrao, and Dr Sonia Singh . Review on Natural Lip Balm: International Journal of Research in Cosmetic Science.

Honey:

Honey is a sweet fluid made by honeybees using the nectar of flowering plants. There are about 320 different varieties of honey, which vary in color, odor and flavor.

Honey contains mostly sugar, as well as a mix of amino acids, vitamins, minerals, iron, zinc and antioxidants. In addition to its use as a natural sweetener, honey is used as an anti- inflammatory, antioxidant and antibacterial agent.

Jadhav Apurva Vinodkumar, Godse Kirti Chandrarahar, Deshmane Prajakta Pradip Formulation and evaluation of organic lip balm : Indo American Journal of Pharmaceutics Research.

Ghee :

Enriched with essential fatty acids, 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 and remove flaky skin.

Meta Maulida Damayanti", Ajeng Kartika Sari, Annisa Rahmah Furqoni Effectiveness of natural lip balm cinnamon(*Cinnamomum burmannii*) in accelerating the incision woundhealing process in rattus norvegicus : *Padjadjaran Journal of Dentistry*

Cinnamon :

The application of the natural lip balm *Cinnamomum* is effective to accelerate lip wound healing by faster lip wound closer.

Hafizh Fadhullah, Anisa Megantika, Kanya Citta Hana Alifia, Pandu Nugroho, Talitha Zada Gofara, Durable Moisturizing Herbal Lip Balm with Honey, Hyaluronic Acid, and SPF : UI Proceedings on Science and Technology.

Jojoba Oil :

Jojoba oil is a mixture of long-chain unsaturated fatty ester, which is structurally different from triglycerides. Its shelf life is longer than that of some oils because jojoba oil does not contain triglycerides. Thus, the tendency of jojoba oil to become oxidized and rancid decreases.

Awari Shubham', Kudnar Amol, Bule Pallavi Tarade Akshay, Ms. Gaikwad Rutuja“, Review on Formulation and Evaluation of Herbal Lip Balm International Journal of Advanced Research in Science, Communication and Technology (IJARSCT).

Coconut Oil :

The primary benefit of coconut oil is its moisturizing effects. This makes it ideal for chapped lips. 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

Alander, J. (2004). Shea butter-a multifunctional ingredient for food and cosmetics. Lipid Technology, 16(9), 202-205 American Journal of Food and Nutrition.

Shea Butter :

Shea butter helps to repair dry, pigmented lips and make them soft and pink

**Ms.Kolekar Aparna Sandipan, Dr.Hingane L.D., “Formulation and Evaluation of Herbal Lipstick”:
International journal of creative research thoughts (ijcrt).**

Rose oil :

Rose oil is added in the formulation for its perfumery properties.

Jenny M Wilkinson, Heather M A Cavanagh, “ Lavender essential oil : a review ” Australian Infection Control.

Lavender oil :

It gives Antimicrobial effect, Antioxidant, Anti inflammatory properties.

Yadav, Anuradba & Kannokar, Kajol & Gop, Rajeshkumar & Mudartha, Deepti & Maheshwari Veena. (2020). Formulation and Evaluation of Herbal Lipbalm from Amaranth Leaf Colour Pigment

According to the survey conducted on volunteers, the colour, odour and visual appearance of the lipbalm was found to be very good, excellent and very good respectively. The consistency and glossiness were found to be excellent and the spreadability of the lip balm was found to be very good.

Sakshi Paithankar, Kaveri Pansare, Anil Pawar, Dbanashri Jadhav, "Formulation of natural lip balm", International Research Journal of Engineering and Technology (IRJET).

The main purpose of lip balm are to improve the appearance and feel of the lips. Non-chemical lip balms moisturise, hydrate, and protect lips that are prone to chapping and dryness.

III. FORMULATION OF HERBAL LIP BALM

Table 1 :Formulation of Herbal Lipbalm

Sr.no.	Ingredients	F1	F2	F3
1	Carrot	6ml	6ml	6ml
2	Lotus	3ml	3ml	3ml
3	Honey	1ml	1ml	1ml
4	Ghee	1ml	1ml	1ml
5	Beeswax	5gm	5gm	5gm
6	Shea Butter	5gm	3gm	5gm
7	Jobaba oil	0.2ml	0.1ml	0.2ml
8	Coconut oil	0.5ml	0.5ml	0.5ml
9	Rose oil	0.1ml	0.3ml	0.1ml
10	Levender oil	0.2ml	0.1ml	0.2ml
11	Cinnamon	0.1gm	0.1gm	0.1gm

3.1 PREPRATION OF LIPBALM

1. For preparing lip balm, we used Lotus extraction and Carrot juice.
2. Lotus is firstly sun dried to evaporate moisture, to preheated mixture of Alcohol: Water in a ratio of 30:70, dried petals were added & reddish pink pigment was obtained.
3. So as to fix the color obtained Glycerin was added.
4. For Carrot juice peel of the carrot, slightly grind it in grinder and filter it.
5. Take of Lotus extraction and Carrot juice. Heat the mixture. Make sure to mix occasionally.
6. When we notice the mixture starts to Caramelise, reduce the heat to low so that it does not burn.
7. Add Honey & ghee. At this Stage take the Flame off Immediately, Pour the mixture into a beaker.
8. The Bees wax was boiled using double boiled method.
9. Add Shea butter to the mixture.
10. Then add Jojoba oil, Coconut oil, Rose oil and Lavender oil.
11. Add Cinnamon powder and freeze the mixture for overnight



Fig. 2 Formulation 1

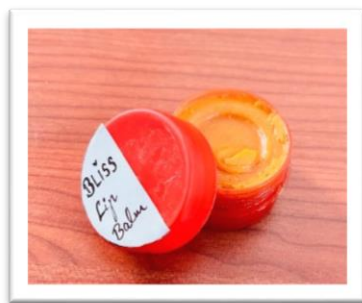


Fig. 3 Formulation 2



Fig. 4 Formulation 3

We prepared three formulation and we finalized our formulation 2 as final and also all test performed for formulation 2.

IV. RESULT AND DISCUSSION

The prepared lipbalm formulation were for various parameters. It was observed that the lip balm shows G-G (good uniform no fermentation perfect application without any deformation). 1-1 (intermediate uniformleaves few fragment appropriate application little deformation). B-B (bad not uniiform many fragments inappropriate application intense deformation of lip balm).

4.1 EVALUATION PARAMETERS FOR LIPBALM

Melting Point:

Melting point is one of the key parameter to identify the drug and its crystalline state. Moreover, variation in melting point gives the clue of drug substance purity. Melting point of formulation was determined by open capillary tube method. Formulation was placed in capillary tube that was attached with thermometer. The whole assembly was kept in paraffin bath and rise in temperature was observed.

The point at which formulation started melting was noted. The experiment was performed in triplicate.

The mean melting point was considered as the melting point of formulation.

Organoleptic Properties:

The lip balm was studied for the basic of organoleptic characteristic such as Color, Odour and Texture.

Test of Spreadability:

The test of Spreadability involved of applying the product (at room temperature) repeateadly onto a glass slide to visually observe the uniformity in the formation of the protective layer and whet.

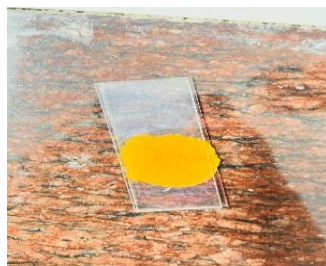


Fig. 5 Spreadability

$$S = m \times l / t$$

Where m=weight to the upper slide
(100gm)

l=length moved on the slide (2gm)

t=time taken (900sec)

$$S = 100 \times 2 / 900 = 0.22 \text{ g cm/s}$$

Skin irritation test:- It is carried out by applying product on the skin for 10 minutes

pH measurement: The pH study was carried out by dissolving 5gm of sample into 45ml water The pH measurement was done using pH meter.



Fig. 6 pH measurement

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 again characterized for organoleptic Properties, Melting point, Spreadability and pH

Temperature Condition :

Parameter	($25.0 \pm 3.0^\circ\text{C}$)	($4.0 \pm 2.0^\circ\text{C}$)	($40.0 \pm 2.0^\circ\text{C}$)
Colour	Orange	Orange	Orange
Odour	Pleasant	Pleasant	Pleasant
Melting point	63	65	64
Spreadability	Good	Good	Good
Ph	6.0	6.0	6.0

Table No. 2 Evaluation Parameters For Lipbalm

Evaluation parameter	Formulation (12 gm)
A. Melting point	69°-89°C
B. Physical appearance	-
a. Colour	Orange
b. Texture	Smooth
c. Odour	Pleasant
d. Spreadability test	G
e. pH measurement	7.0
f. Skin irritation	No irritation
g. Microbial test	Pass

As, conventional lip balm often contain petrolatum, synthetic waxes, alumina, parabens, hydrogenated oils, artificial fragrances and colours which are toxic, the main motive behind the formulation was to incorporate as many natural ingredients to retain the natural properties of li balm. The use of Carrot provided natural colour which are moreover less toxic compared to synthetic colours.

Evaluation of prepared lip balm was done for melting point, pH measurement, test for spreadability and stability studies. The melting point was found to be 63-65°C and the pH was found to be 6.0. Test of spreadability was found to be G- Good: uniform, no fragmentation; perfect application, without any deformation of the lip balm.

After performing the Stability studies for the lip balm at different temperatures, it was observed that the lip balm at room temperature (25.0±3.0°C) and refrigerator (4.0±2.0°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± 2.0°C).

Different natural ingredients were used for the formulation of the herbal lip balm that contains the colouring agent lycopene obtained from Solanum lycopersicum. The lip balm was evaluated through various parameters and was found to pass these.

Hence from the above evaluation parameter it was concluded that the formulated herbal lipstick shows minimal no side effect and this showing maximum local effect on lips.

V. CONCLUSION

The aim of current research work was to prepare lip balm by using maximum possible natural ingredients. Mainly Carrot juice and lotus extractiom are used for the formulation which is not available in market and in other marketed products.

The effects of these ingredients on physicochemical properties such as organoleptic characteristics, melting point, consistency and spreadability on formulation were studied. It can be concluded that lip balm formulation was successfully prepared by using these natural additives.

Results of various tests implied that the formulation passed various tests physicochemical tests and safe to use. Based on stability data, the storage condition for the formulation is at room temperature.

In the current formulation, Beeswax and Shea butter were used as a base.

Cosmetics chemists choose from thousands of ingredients when they create new products, but they are always careful to select ones with chemical properties that enhance the look, feel, and use of the product they are making.

For instance, no one wants lip balm to be too hard, which is why most homemade lip balm recipes call for some type of oil or butter. Oils are generally thick, viscous liquids at room temperature and are usually emollients, meaning that they soften and smoothen the skin.

Butters are another kind of emollient; they are soft, but not liquid, at room temperature. On the other hand, a super soft, runny lip balm would be too messy, so waxes, like beeswax, which are solids at room temperature, are added to thicken the recipe. The "perfect" product means getting just the right ratio of emollients to waxes.

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