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Research

Formulation and Evaluvation of *Plectranthusamboinicus* Ethanolic Extract Based Herbal Lip Balm

***Muthamizharasi. C, Lokesh. S, Lithika. R, Dhanalakshmi. K, Vetriselvam.K, Mohana Krishnan. P, L.V Vigneshwaran**

RKP College of Pharmacy, Krishnagiri, Tamilnadu, India

*Author for Correspondence: Muthamizharasi. C
Email: muthuc2003@gmail.com

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Abstract

The current research focused on designing and assessing a herbal lip balm with the ethanolic extract of *Plectranthusamboinicus*, a medicinal herb that has anti-inflammatory, antimicrobial, and antioxidant activities. The product was prepared based on natural products including beeswax, coconut oil, almond oil, aloe vera gel, vitamin E, and vanilla essence. Maceration using 95% ethanol was applied to the plant material to achieve the active extract. Three formulations (F1, F2, and F3) were developed in which the ratio of base ingredients was changed while the concentration of the active extract was kept constant. The formulations were tested for the important physicochemical parameters such as organoleptic properties, pH, melting point, water content, spreadability, and skin irritation. The findings revealed that the formulations all had a smooth texture, good fragrance, and maximum spreadability. pH values of 6.5 to 7.0 corresponded to the physiological pH of lips, thus ensuring minimal irritation. Formulation melting points of 66–68°C assured thermal stability during routine storage conditions. No irritation was seen during lip irritation tests. F1 among the three had the best compromise between texture, stability, and acceptability to the user. The research concludes that the *Plectranthusamboinicus* herbal lip balm is a stable, non-irritating, and effective formula, providing a promising alternative to artificial lip care products.

Keywords: *Plectranthusamboinicus,* Herbal lip balm,Almond oil,Vitamin E, Moisturize.

INTRODUCTION

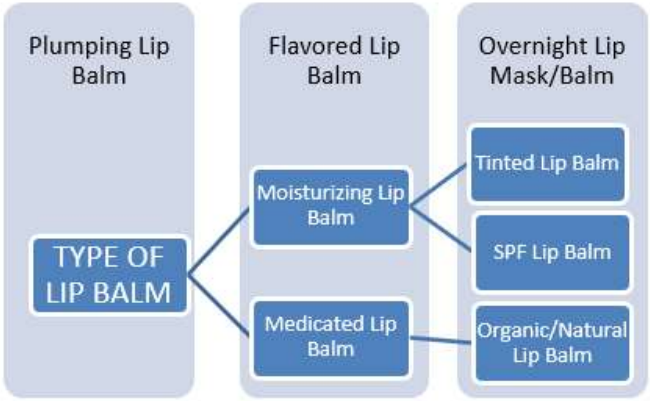
According to the D&C Act of 1940 and the Rules of 1945, cosmetics are defined as any article used to clean, beautify, charm, or alter the appearance of the body. Cosmetics have become a key aspect of the modern lifestyle. Lip balms are the most common lip care items for addressing this problem. Lip balms are cosmetics that nourish and moisturize the lips. Lip cosmetics on the market vary in color and texture. There is a rise in demand for herbal cosmetics. Products made from organic raw materials have been developed using cutting-edge

technology and methodologies. Organic raw materials used in lip balm production are carefully planted and nourished without the use of harmful pesticides or manures. They are naturally stored under ideal conditions rather than using modern methods. Dryness, chapping, and cracking of the lips are caused by extreme weather conditions. Lips without oil glands require additional attention, hydration, and defense throughout the day. During the winter months, many people suffer from dry lips, which can last into the summer. Artificial scents, colors, parabens, petroleumatum, synthetic wax, and alumina are some examples of the synthetic ingredients used in manufactured lip balms. The chemicals used in lip balms must be thoroughly studied before use to avoid any acute or long-term damage.

Aim and Objective

To create and assess the best possible lip balm formula. Based on natural ingredients, we have developed a lip balm in this study. The ingredients used to make the lip balm were beeswax, coconut oil, almond oil, vitamin E, aleovera, and vanilla essence. Different lip balm formulations' physicochemical characteristics, such as their melting point, organoleptic features, stability, moisture content, and color intensity, were assessed.

Type of Lip Balm



Uses of Lip Balm

In addition to providing a protective layer against harsh external factors, lip balm's primary function is to hydrate and shield the lips from drying out, chapping, and cracking.

Methodology

The P*lectranthusamboinicus*aerial plant was gathered from the home town city's Dharmapuri(district) kaveripuram(village). Dr.V.Ravi, M.Sc., Ph.D., Associate Professor & Head of the PG & Research Department of Botany Government Arts College For Men, Krishnagiri-635001, Tamil Nadu, recognized and verified it.

Extraction Process

Ethanol extraction

Plants were dried for 2 weeks at room temperature, pulverized to a powder, and passed through a No. 40 sieve. The plant powder (100 g) was weighed, transferred to a round-bottom flask, and treated with 95% ethanol using a maceration method.

Materials required

Maceration Procedure

Preparation Of Ethanolic Extraction Based On Maceration Method

Plectranthusamboinicus extract preparation, The *Plectranthusamboinicus* plant should be dried and ground into a coarse powder. In a closed container, suspend 50 g of powder in 500 mL of ethanol (1:4ratio). Shake daily for seven days at room temperature. Use muslin cloth or filter paper to filter the extract. Use a water bath or let the ethanol air dry. To apply, keep the concentrated extract in a well-sealed container.

Pharmacognostical Profile Of Active Ingredient

Table 1: Pharmacognostical Profile of Active Ingredients

S. No	Name	Biologicalsource& Family	Parts	Chemical constituents	Uses
1.	Karpuravalli	Plectranthusamboinicus (lamiaceae) 	Leaves	Monoterpenoids like carvacrol, thymol, and γterpinene, as well as flavonoids, tannins, saponins.	respiratory issues (cough, asthma, bronchitis), digestive problems (dyspepsia, indigestion, diarrhea), and skin conditions.
2.	Almond oil		seed	lipids (around 50%), proteins (around 25%), and carbohydrates (around 20%), as well as essential fatty acids like oleic and linoleic acid, and bioactive compounds like flavonoids and phenolic acids	supporting heart health, aiding in weight management, and providing essential nutrients like vitamin E and magnesium

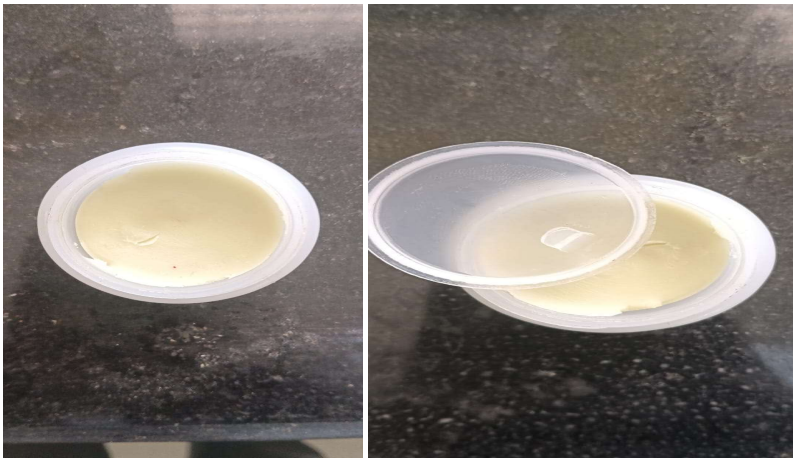
Lipbalm Ingredients

Table 2: Lipbalm Ingredients

S. No.	Ingredient	Use
01	Active pharmaceutical ingredients	Anti-acne, Anti-bacterial, Anti-asthma
02	Coconut oil	Good for skin and hair and hydrating the skin
03	Bees wax	Making candles,lipbalm,lotions,soaps
04	Aleovera	Anti inflammatory,Anti microbial activity
05	Vitamin E	Healthy skin and Eye,strengthen the body natural defence against illness and infection
06	Almond oil	Good for skin and hair
07	Vanilla essence	Flavoring agent

Method of formulation

The best mix of substances was employed to manufacture lip balm. The base ingredient, beeswax, was melted on a hotplate at a temperature of around 50 to 60 degrees Celsius. Then, coconut oil was blended in until aloe vera, vitamin E, almond oil, vanilla essence, and API were added. After that, the mixture was put into a container and cooled in the fridge for an hour at 5 to 2 degrees Celsius. It was then kept at room temperature for 48 hours to stabilize.



Lip Balm Formulation With Different Concentration

Table3: Lip balm formulation with different concentration

INGREDIENTS	F1	F2	F3
Active pharmaceutical ingredients	5ml	5ml	5ml
Coconut oil	3.5ml	3ml	2.5ml
Bees wax	2.5gm	3gm	3gm
Aleovera	1gm	1gm	1gm
Vitamin E	2gm	2gm	2gm
Almond oil	3.5ml	3ml	2.5ml
Vanilla essence	q.s	q.s	q.s

Evaluation Criteria

Physical examination Organoleptic characters such as appearance color, odour, were identified.

PH

The lip balm's pH was measured in order to look into any potential negative effects. It was decided to keep the formulation's PH as close to neutral as feasible because an acidic or alkaline PH could irritate lips. One gram of the sample was dissolved in fifty milliliters of water to investigate the PH value. A PH meter was used to measure the pH.

Test for lip irritation

After applying lip balm to the lip for 10 minutes, the reaction was noted and recorded.

Determination of total moisture content

Total moisture content was calculated by placing 5g of the lip balm in a petridish and drying it for two hours at 100°C in a hot-air –oven. After that,it was weighed,heated ,cooled. The moisture content s indicated by the weight difference.

Melting point

Melting point of lip balm was found to be in the range of 66°C-68°C, which matches with the appropriate melting point of between 65 and 75°C.

Test of spreadability

Prepared lip balm was tested for its ability of spreading which initially has show G-uniform, no fragmentation perfect application,without any deformation at temperature as given in figure

RESULT AND DISCUSSION

Colour, odour, appearance,moisture content and were among the organoleptic properties of herbal lip balm that were measured.The lip balm does not irritate the lips.

S.No	Parameters	Result
1	Colour	White
2	Odour	Pleasant
3	PH	6.5to 7
4	Texture	Smooth
5	Lip irritation	Non irritant

PH

The pH of lip balm, was near to neutral pH 6.5 to 7this would not cause any irritation to lips.

Melting point
Melting point of lip balm was found to be in the range of 66°C – 68°C, which matches with the appropriate melting point of between 65°Cand 75 °C

Lip irritation
After applying lip balm to the lip for 10 minutes, the reaction was noted and recorded.

DISCUSSION

The increasing requirements for the herbal preparation of cosmetics and greater demand to make them environmentally friendly products are in favor of expanding market for the herbal preparations. The creation of organic cosmetics have substantial technical hurdles in the sense that,apart from needing expertise anexperience of the formulator thus, The cosmetic manufacturers have explored in research and development of the product category and ready to formulate environment friendly products as per concern of consumers withthe organic ingredients, they are of organic origin.Formulations of prepared lip balm were tested for organoleptic properties, melting point,spreadability, pH, stability studies. It indicates melting point in the range of 66 °Cto 68 °C, which matches the optimum melting point. The spreadability test was found to be G- Good: uniform,does not leave pieces, ideal application, without any deformation of lip balm initially atroom temperature. pH of lip balm was discovered close to neutral i.e 6.5 to 7 this would not irritate.

CONCLUSION

Room temperature and fridge stored formulation retained identical stability. Organoleptic stability and spreadability are "good". Storage under such conditions is appropriate since the functionality of the product is ensured. During the stability test, natural ingredient-containing lip balm had an appropriate melting point of (64° C average). Based on the spreadability test, storage conditions in the furnace (40.0±2.0° C) is not advisable because of product loss.functionality over regular stability testing. It was decided that natural ingredient lip balm were safe to apply and this mixture proved to be a better option in the formulation of a lip balm.By varying the excipients or other excipient mixtures, can produce a new product with various and better characteristics. According to recent research, it is presumed that this formula will be stable.

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