FORMULATION AND EVALUATION OF HERBAL LIP BALM CONTAINING *MULBERRY* EXTRACT

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ABSTRACT:
Lip balm is the one of regularly use cosmetics item. Lip balm is waxy substance which is applied to the lip to keep them moisturized. The design, quality, formulation of lip balm made from natural ingredients was studied. In this study, lip balm has been made by using various ingredients like mulberry fruit, wax, castor oil, cow ghee, honey, vita-E, coffee powder and rose essence. Homogenous mixing method was used to produce the lip balm. The formulation of lip balm was tested by applying it on a glass slide. Various evaluations such as chemical stability, pH melting point, and Spreadability were carried out for the evaluation of lip balm. Lip balm prepared from above ingredients could be a better option for treatment of various lip issues. The concept behind our product is a long-lasting moisturizing and anti-hyper pigmentation property. Lip balm is not gender specific product that is anyone can easily use these cosmetics. Current cosmetic lip products are based on use of toxic chemical ingredients with various adverse effects. That's why it leads to study natural ingredients used to production of natural lip balm. In this work, an attempt has made to study herbal ingredients used to formulate herbal lip balm. The herbal lip balm nourishes the lips and help to get hydrated and protect lips which was affected by the dryness

KEYWORDS : Mulberry**,** Herbal Lip Balm **,** Anti hyper pigmentation , herbal

1. Introduction

Cosmetic play important role in today's lifestyles. According to D & C act 1940 and rules 1945 cosmetic means any article intended to be rubbed, poured, sprinkle or spray on any part of a human body for beautifying purpose. The personal care system has seen a multiplication in the use of herbal cosmetics. For thousands of years, folk medicine has utilized natural items all throughout the world. They have more pharmacological qualities like cytostatic, antibacterial, and anti-inflammatory actions.

There are many different formulations of herbal cosmetic products. The term "herbal" denotes safety in contrast to synthetic products, which have a number of negative health impacts on people. The need for environmentally safe natural products in today's rapidly developing society has led to a rise in the manufacturing of natural cosmetics.

Cosmetics, like any product containing water and organic/inorganic compounds, require preservation against microbial contamination to guarantee consumer's safety and to increase their shelf-life. The microbiological safety has as main goal of consumer protection against potentially pathogenic microorganisms, together with the product's preservation resulting from biological and physicochemical deterioration. This is ensured by chemical, physical, or physicochemical strategies. The most common strategy is based on the application of antimicrobial agents, either by using synthetic or natural compounds, or even multifunctional ingredients.

Generally, a cosmetic product is used in the direct treatment of the external surface of the human body to perform the following four functions:

1. maintenance in good condition
2. change in appearance
3. protection
4. correction of body odor

The term "cosmeceutics" (or active cosmetics) was popularized by the dermatologist Albert Kligman in the 1980s. This term means a combination of cosmetics and pharmaceuticals, used to define products that can have a beneficial effect on skin, but cannot be considered as having a clear biological therapeutic effect **Cosmetic Products with Antimicrobial Effect:**

Cosmetic products with antimicrobial effect can be described as preparations with the ability to provide consumer's protection against the presence of antimicrobial compounds, having bactericidal effect. Products like mouthwashes, skin disinfectants or antibacterial soaps present this characteristic. Currently, the limit between drugs and cosmetic products with antimicrobial effect is increasingly indistinct. Sometimes the difference between a cosmetic product and a drug lies in the concentration of the active ingredient in the product.

1.1 **Taxonomy :**

Mulberry Fruit:

Synonyms: Morus, white mulberry, red mulberry.

Biological Source: it is consist of fresh fruits of *Morus alba*.

Family: Moraceae

Taxonomical Classification:

Mul berry	
Kingdom	Plantae
Subkingdom	Tracheobionta
Superdivision	Spermatophyta
Division	Magnoliophyta
Class	Magnoliopsida
Subclass	Hamamelididae
Order	Urticales
Family	Moraceae
Genus	MorusL
Species	MorusalbaL, Morusnigra L, Morusrubra

1.2 Chemical composition:

The highest total phenolic and flavonoid contents were observed in black mulberry (1422 mg gallic acid equivalents/100 g fresh matter and 276 mg quercetin equivalents/100 g fresh matter). M. alba had the highest total fat content (1.10%), followed by M. nigra (0.95%) and M. rubra (0.85%), respectively. The major fatty acids in mulberry fruits were linoleic acid (54.2%), palmitic acid (19.8%) and oleic acid (8.41%), respectively. The total soluble solids content of mulberry species varied between 15.9% (M. rubra L.) and 20.4% (M. alba L.), acidity between 0.25% (M. alba L.) and 1.40% (M. nigra L.), pH between 3.52 (M. nigra L.) and 5.60 (M. alba L.), ascorbic acid 19.4 mg/100 g (M. rubra L.) and 22.4 mg/100 g (M. alba L.), respectively.

Uses:

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. 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 multiform, sunburn, cold and dry weather, or trauma may also cause the lips to swell.

Sun damage:

Sun-damaged lips are sometimes dry and scaly and feel like sandpaper. These changes are considered precancerous, particularly if the lip surface thins, reddens, and develops sores (ulcers). Sun-damaged lips with such changes should be evaluated by a doctor or dentist. Treatment for sun-damaged lips includes lasers, topical prescription creams, or surgery.

Inflammation:

Inflammation of the lips (called cheilitis), the lips may become painful, irritated, red, cracked, and scaly. Treatment consists of replacing the dentures, which helps reduce the folds at the corners of the mouth, or restoring proper tooth size with partial de, crowns, or implants.

Discoloration:

Low oxygen content in the blood or poor circulation can cause blueish discoloration in the skin and lips. This is known as cyanosis. Cyanosis occurs when the oxygen saturation levels in a person's blood fall below 85% . A person may also develop cyanosis if they have abnormal hemoglobin

Sores:

Fever Blisters (also known as cold sores) are painful fluid-filled sores that form on the outside of the mouth around the lips. Fever blisters are very contagious. Canker Sores are painful white or yellow sores that only form inside the mouth, usually on the insides of the cheeks or lips or on the tongue.

1.8 Symptoms and Causes of lips infection:

- **Dry or scalping lips:**
  This means lips are more susceptible to drying out and becoming chapped (cracked). Lack of moisture can make the problem worse, whether it's weatherinduced or related to a lack of self-care. Little humidity in the air during the winter months is known to cause chapped lips.
- **Cracking skin:**
  Untreated or severely dry skin can cause your skin to crack open and bleed. Open sores or wounds from these cracks expose your body to germs that can cause infections. Rarely, dry, itchy skin can indicate a more serious health problem, such as diabetes or kidney disease.
- **Peeling skin:**
  Peeling skin is unintended damage to and loss of the upper layer of your skin (epidermis). Peeling skin may occur because of direct damage to the skin, such as from sunburn or infection.
- **Itching:**
  There are some bacterial, viral, and fungal infections that can make your lips feel itchy. The herpes simplex virus, candida overgrowth, and strep (group A Streptococcus) and staph (group A Staphylococcus) infections are all common causes of itchy and uncomfortable lips.
- **Mild pain:**
  Nagging, annoying, but doesn't really interfere with daily living activities.

  1 – Pain is very mild, barely noticeable. Most of the time you don't think about it.

  2 – Minor pain. Annoying and may have occasional stronger twinges.
- **Sores in your lips and your mouth:**
  The medical term for inflamed lips is cheilitis. Lips usually become inflamed as a result of mild irritation. They can also become inflamed if they're infected with bacteria or fungi that have entered cracks in the skin of the lips.

2. MATERIALS AND METHODS:

Preparation of extract:

Extraction is a process which involves the separation of medicinal compound from reservoirs of plant materials by using specific solvent and employing standard procedure.

The extract use in these preparation of herbal lip balm which is Mulberry extract which can not prepare by any extraction method we buy the mulberry liquid extract from the BRM chemicals which provide the herbal liquid extract of the various plant and plant product.

Mainly the extraction process are followed to take extract which can mention below:

Preparation of extract by using Soxhlet apparatus:

Soxhlet extraction is a popular method for extracting phytochemicals from solid plant materials. The Soxhlet extraction technique is still used to compare the performance of modern extraction techniques Soxhlet extraction is a very useful tool for preparative purposes in which the analyte is concentrated as a whole from the matrix or separated from specific interfering substances. Solvent extraction of solid samples, also referred to as solid-liquid extraction.

Procedure:

- Reserved powdered samples of fruits was taken and weighed about 20 gm and placed inside a thimble made from thick filter paper.
- This is filled into the main chamber of the Soxhlet extractor.
- Ratio of 1:10 i.e., powder: solvent was followed. This Soxhlet extractor is placed in to a flask containing the extraction solvent.

- The Soxhlet is then equipped with a condenser. Then added 200 ml ethanol. The solvent is heated at 60°C. The solvent vapor rises up a distillation arm and floods into the chamber containing the solid thimble. The condenser ensures that any solvent vapor cools and drips back into the solid material chamber.
- The warm solvent gradually fills the chamber containing the solid material. In the warm solvent, some of the desired compound will dissolve.
- When the Soxhlet chamber is nearly full, the syphon side arm automatically empties the chamber, with the solvent running back down to the distillation flask.

This cycle can be repeated many times over the course of hours or days.

- A portion of the compound dissolves in the solvent during each cycle, and the desired compound is concentrated in the distillation flask after each cycle. The benefits of this system are that instead of passing many portions of worm solvent through the sample, only one batch of solvent is recycled.
- Following extraction, the solvent is typically removed using a rotary evaporator, yielding a portion of the extracted compound. The non-soluble portion of the extracted solid is usually discarded in the thimble.

2.3 Formulation development:

Formulation table:

Sr No.	Ingredients	F1	F2	F3
1.	Bees wax	2.5gm	3.6gm	1gm
2.	Castor oil	2.5gm	__	5ml
3.	Honey	2.8gm	__	2gm
4.	Cow ghee	2.5gm	__	__
5.	Vit E	2.5ml	0.3ml	1gm
6.	Grapes powder	__	__	1gm
7.	Coffee powder	0.5gm	__	Qs
8.	Mulberry extract	Qs	2.2ml	Qs
9.	Almond oil	__	1.6ml	__
10.	Alovera	__	0.4gm	__
11.	Glycerol	__	1.3ml	__

Formulation table

Formula :

Bees wax:2.5gm, Castor oil: 2.5 gm, Honey: 2.8gm, Cow ghee: 2.5gm, Vit E: 2.5ml, Coffee powder: 0.5gm, Mulberry extract: Qs. In this formulation the water phase and oil phase do not mix together, the two separate phases which is oil phase and water phase are form due to the presence of mulberry

3 .EVALUTION TEST :

Organoleptic Evaluation:

i)Color: The formulation color was tested against a white background. **ii) Odour:** The odour of the formulation was asses by smelling it.

Physicochemical Evaluation:

i) pH: The lip balm, was characterized for physical stability, pH and other factor. The normal range of herbal lip balm pH is **5.5** to **6.5 ii) Spreadability test:** The test of the spreadability was carried out of applying the product repeatedly onto a glass slide to visually observe the uniformity in the formation of projective layer and whether the sick fragmented, deformed or broke during application. Prepared lip balm initially has shown G-Good: uniform, no fragmentation with any deformation at room temperature.

iii)Melting point: The sample lip balm is taken in the glass capillary whose one end was sealed by flame. The capillary containing drug dipped in liquid paraffin inside the melting point apparatus. Melting was determine and melting point was reported as **iv) Skin irritation test:** It is carried out by applying lip balm on the skin for 10 min. the skin surface was soft after the some time and it does not observe any irritation to the skin.

v) Stability studies: Prepared lip balm was placed for accelerated stability studies at room temperature (25.0+-3.00C), refrigeration (4+-2.00C) and oven temperature (40.0+-2.00C) for 30 days .After 30 days it was again characterized for organoleptic properties, melting point, spreadability and pH. It was observed that prepared lip balm shows little deformation of lip balm at room temperature (25.0+- 3.0) and refrigeration (4+-2.0) and little deformation at oven temperature (40.0+- 2.0).

(-) = Absence

4. RESULTS AND DISCUSSION

4.1 Phytochemical evaluation:

Sr No.	Test	Result
1.	**Test for alkaloids:** I. Dragendorffs test II. Picric acid test	 Presence. Absence.
2.	**Test for carbohydrates:** I. Barfoed's test	 Presence.
3.	**Test for glycoside:** I. Aqueous NaOH test II. Bromine water test	 Presence. Presence.
4.	**Test for proteins:** I. Millon's test	 Presence.
5.	**Test for flavonoids:** I. Lead acetate test	Presence.
6.	**Test for tannins:** I. Braymers test	 Absence.
7.	**Test for terpenoids:** I. Salkowski's test	Presence.
8.	**Test for triterpenoids:** I. Salkowski's test	 Presence.
9.	**Test for resins:** I. Turbidity test	 Presence.

Table No 4.1: Phytochemical Evaluation

4.2 Evaluation of herbal lip balm:

4.2.1 Organoleptic evaluation:

i) Color: The formulation color was tested against the white background**. Beach color** was to be observed.

ii) Odour: The odour of the formulation was asses by smelling it. **Aromatic and sweetish type odour** was observed.

4.2.2 Physicochemical evaluation:

i) pH: The lip balm, was characterized for physical stability, pH and other factor. The normal range of herbal lip balm pH is 5.5 to 6.5.

After we can measure the pH of formulation which we can prepared it is found to be **5.9.**

ii)Spread ability test: The test of the spread ability was carried out of applying the product repeatedly onto a glass slide to visually observe the uniformity in the formation of projective layer and whether the sick fragmented, deformed or broke during application. Prepared lip balm initially has shown G-Good: uniform, no fragmentation with any deformation at room temperature

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5. SUMMARY AND CONCLUSION :

The current study's goal was to make lip balm with as many natural elements as feasible. The primary coloring agent was mulberry extract; the flavoring agent was rose water; the antioxidant was a vitamin E capsule; and the moisturizing agent was almond oil. These substances' impacts on physicochemical properties such as consistency, spreadability, melting point, and organoleptic characteristics were investigated in relation to formulation. We may therefore conclude that the composition of lip balm was successfully created using these all-natural ingredients.

The formulation displayed the same stability behavior whether it was refrigerated or kept at room temperature. The spreadability was determined to be "Good" and the organoleptic properties were steady. Because the product's functioning was preserved, storage under these circumstances was deemed sufficient. The lip balm composed of natural materials had a suitable melting point (mean of 67°C) during the stability test. The spreadability test indicates that, in comparison to the standard stability test, the oven's storage condition of 40.0± 2.0°C is not advised due to product functionality being lost. It was determined that lip balm formulated with natural substances is safe to use, and that this combination was the best choice for lip balm composition.

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