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Formulation & Evaluation of Herb - Infused Lipbalm with Edible Glitter

Pranil B. Kamble[1], Abhijeet V. Patil[2], Harshad M. Gurav[3], Chaitanya A. Ghodake[4], Tushar K. Mane[5], Sagar N. Patil[6]

[1,2,3,4,5,6]Mahadevrao Wandre Institute of Technology Turkewadi, Chandgad, Kolhapur, Maharastra.

ABSTRACT:
The present research work is based on the Formulation & evaluation of Herb – Infused Lip-balm with Edible Glitter by using natural herbs like tomato extract, rose infused oil, bees wax, cocoa butter, almond oil, glycerine, honey, Vitamin E, edible glitter. The incorporation of edible glitter improves the aesthetic appeal without compromising safety, also ensuring safety upon accidental ingestion. Tomato (Solanum lycopersicum) extract is rich in bioactive compounds such as lycopene, vitamin C and flavonoids, which provides potent antioxidant, anti-tanning, skin-brightening, mild astringent properties. Rose infused oil nourishes and softens lips naturally, also the almond oil aids in brightening of the lips. Honey acts as a preservative & Vitamin E shows the anti-oxidant property. Lip-balm is one of the cosmeceutical product, which when applied to the lips prevents them from drying out and shields them from external environmental elements. It preserves the inherent beauty and well-being of the lips. The lip balm was characterized for its physical stability, pH, melting point, and spreadability. The pH was found to be 6.9 to 7.1, melting point 65°C to 72°C, spreadability and stability studies were performed, the prepared lip balm was shown to be homogeneous and capable of flawless application without distortion.

KEYWORDS: Herbal lip-balm, Natural ingredients, Cosmetic formulation, Edible glitter.

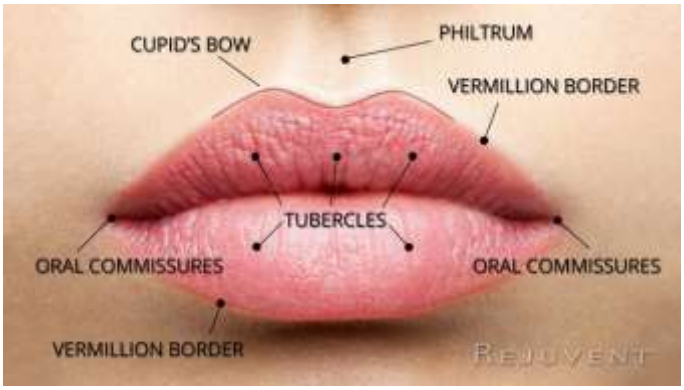
INTRODUCTION

Herbal cosmetic formulations are rising globally. These organic products and raw materials are selected through methodical cultivation and maintenance of the raw materials for the formulation of lip balm, which are favoured to be free of hazardous chemicals and that are stored naturally.(3) Cosmetics with physiologically active ingredients, sometimes known as "cosmeceuticals" are supposed to provide therapeutic or drug-like benefits.(8) Lip balm was created to protect the lips from external influences such as the cold and prevent dry, chapped lips. Protecting the lips helps prevent irritation and infection.(1) The present work was carried out by using these ingredients that have almost no side effects. The term "lip balm" refers to products that are used to protect lips along with beautifying them. They create an adhesive, moisture-resistant layer of lipids. Herbal lip balms are a popular way to address the negative effects of synthetic lip balm as they typically produce a sticky, oily layer that seals in moisture.(10) In addition to the base herbal ingredients, certain natural extracts have been explored for their multifunctional benefits in lip-care formulations. Among this tomato extract (Solanum Lycopersicon) is rich in bioactive components such as Lycopene, Vitamin C and flavonoids, which provides potent antioxidant property along with anti–tanning, skin brightening and mild astringent effect, which makes it more useful for maintaining lip health

and promoting natural glow. [11, 12]

In recent years, edible glitters has gained popularity in various cosmetic formulations for its ability to enhance the visual appeal of the formulation and its edible property. The edible glitters are mainly composed of food-grade ingredients such as Gum Arabic, starch or sugar derivatives, which makes them suitable for use in lip-balm. [13]

ANATOMY OF LIPS: [8]



Lip anatomy includes a variety of features that influence both the function and appearance of the lip. Here's a basic overview of the lip structure:

Skin: The outer layer of the lips is skin, as is the rest of the body. In contrast, lip skin is more sensitive and thin. The visible line that separates the vermilion-colored area of the lips from the surrounding skin is known as the vermilion border.

The vermilion zone refers to the reddish portion of the lips. It is crimson in hue because it has more blood vessels than usual.

Philtrum is a vertical groove or indentation that runs from the base up the middle of the top lip.

The cupid's bow is a double curve or V-shaped region in the center of the upper lip.

The oral mucosa is a thin, moist layer of tissue that protects the lips' inner surface. It is separate from the outer skin and helps keep the lips moist. Lips include tiny glands known as labia that keep them moisturized and help with speech and eating.

Nerve ending: One of the many muscles that make up the lips and are in charge of their movement and expression is the orbicularis oris, which surrounds the mouth and facilitates smiling and puckering. Lips are extremely sensitive to touch, warmth, and pain due to their high density of nerve endings.

DIFFERENCE BETWEEN LIPS AND REGULAR SKIN [9]

Since the outer layer of the skin's epidermis is highly keratinized, the lips' epithelium is significantly thinner. Even so, both the skin and the lips contain nerve endings that transmit sensory information. Comparing to the 15–20 layers of cells that make up skin, lips only have three to five layers. Furthermore, because lips have fewer melanocytes, any melanin produced does not significantly alter their redness. In comparison to skin, hair follicles, sweat glands, and sebaceous glands prevent within the lips' borders. Lips lack defense glands and have more keratinized layers than skin, making them more susceptible to infections, dry weather, and extreme temperature changes. As a result, lips may become virally infected, dry out faster, and break more readily

PROBLEMS ASSOCIATED WITH LIPS [1, 2, 3, 8, 9]

1. **Swelling:** Lip swelling can be a symptom of allergic reactions. Sensitivities to specific foods or drinks, drugs, cosmetics, or airborne irritants can all result in reactions. The lips typically return to normal once the cause has been found and removed. However, thme cause of swelling often remains unknown. Lip swelling can also result from factors like sunburn, cold weather and dryness. In severe cases, swelling can lead to difficulty in breathing or swallowing, requiring immediate medical attention.
2. **Sun damage:** Long periods of direct sunlight can result in severe stratum corneum lip injury, especially to the lower lip, leading to superficial cracks and thin red or white stripes. This type of damage can be reduced by covering the lips with a lip balm that contains sunscreen or by protecting the face from the sun's harmful rays.
3. **Inflammation:** When the lips become inflamed (cheilitis), the corners of the mouth may become painful, burning, red, cracked, and scaly. Cheilitis can be caused by a lack of vitamin B2 in the diet.
4. **Discoloration:** The dark patches around the lips that are called melanotic macules and frequently occur can be freckles that linger for years. Concern should not be expressed over these marks. Many tiny, dispersed brownish-black patches could indicate Peutz-Jeghers syndrome, a genetic condition characterized by the formation of polyps in the intestines and stomach. Dry lips, lip cracking, and reddening of the mouth lining are symptoms of Kawasaki disease, an illness with no known origin that often affects infants and children 8 years of age or younger.
5. **Sore:** A lip sore with firm edges or a raised region could be a sign of skin cancer. Other sores could appear as signs of syphilis or an oral herpes simplex virus infection, among other illnesses. For certain others, like keratoacanthoma, the cause is unknown.
6. **Cold sores:** Cold sores and fever blisters are both small, painful blisters filled with fluid that appear on or near the lips. They are caused by the herpes simplex virus and are very contagious.

Types of lip balm [8, 10]

There are seven different lip balms to pick from.

1. **Tinted Lip Balm:** A type of lip balm used to hydrate and colorize the lips called tinted. If the user doesn't want to wear a heavy coat of lipstick, tinted lip balms are a perfect alternative. Users use tinted lip balm to moisturize their lips as well as to give them a brilliant wash of color. To use the tinted lip balm, simply apply it immediately to your lips.
2. **Medicated Lip Balm:** These lip balms are likely to be the least soothing and irritating among the group. Dermatologists sometimes prescribe this lip balm as part of a treatment plan for chapped lips and other lip-related diseases.
3. **Flavoured Lip Balm:** It is a type of lip balm with flavors such as vanilla, mint, mango, and many more delicious flavors, designed to moisturize and delight the users' taste buds and fragrance.
4. **Organic Lip Balm:** It is a type of lip balm that contains organic or natural ingredients such as avocado oil, jojoba oil, beeswax, vitamin E, hemp, and cocoa butter.
5. **SPF Lip Balm:** SPF lip balms include ingredients that protect the lips from the harmful effects of the sun's rays. It serves as a sunscreen, shielding the lips from sun damage, blistering, and even skin cancer. If the user is careful of their skin and wants to avoid the detrimental effects of the sun, this lip balm is ideal for use on a day out.
6. **Plumping Lip Balm:** The plumping lip balm is a type of lip balm that not only moisturizes the lips but also makes them appear more round. The plumping lip balm is useful for customers who desire to acquire plumper lips without undergoing surgical procedures.

II. OBJECTIVES

OBJECTIVES [12, 13]

- To formulate herbal lip-balm using tomato extract, waxes and natural oils for enhanced therapeutic effects.
- To include edible glitter into the Herb-infused lip-balm, which improves the aesthetic appeal, also it ensures its safety on accidental oral exposure.
- To evaluate the physiochemical properties of lip-balm such as melting point, pH, stability, spreadability.
- To assess the antioxidant property of tomato into lip-balm.
- To ensure that the prepared formulation is suitable and safe for daily use with minimal risk of irritation or side effects.
- To develop a cosmetic formulation that lineup with present trends in herbal and aesthetic skin care.

ADVANTAGES [12, 13]

1. This formulation is free from synthetic chemicals, the use of herbal extracts, natural oils and waxes which makes the lip-balm safe for sensitive skin.
2. Tomato extract provides potent antioxidants like lycopene and Vitamin C, which protect lip from UV damage, oxidation and premature aging.
3. Tomato has natural astringent and anti-pigmentation properties which helps in reducing tanning and darkening of lips.
4. The incorporation of edible glitter into formulation enhances visual appeal & also ensures safety in case of accidental ingestion.
5. Herbal oils and butters provides deep hydration, prevents dryness and helps in healing of chapped or damaged lips.
6. Combines health-conscious, herbal skincare trends with aesthetic features suitable especially for younger users.
7. The formulation is suitable and safe for daily applications, with minimal risk of irritation due to the absence of harmful additives.

III. REVIEW OF LITERATURE

Rushikesh Datta Wagh et al. described that Rose-infused oil prepared by the maceration method possesses soothing, moisturizing, antioxidant, and anti-inflammatory properties. Researchers found that prolonged steeping of rose petals in olive oil helps extract bioactive constituents beneficial for skin nourishment and wound healing.

Akash Popat Damale, Vaibhav Bhausaheb Chavan, Yogesh Musale formulated and evaluated a herbal lip balm using tomato extract to determine the best concentration of base materials. The study highlighted the moisturizing, antioxidant, and protective effects of tomato extract in lip care formulations.

Jincy. V. Varghese et al.- According to the Drug and Cosmetics Act, 1940 cosmetics are defined as, any article intended to be rubbed, poured, sprinkled or sprayed on, or introduced into, or otherwise applied to, the human body or any form, beauty, cleaning, promoting attractiveness, or alter the appearance and includes any article intended for use as a component of cosmetic. Cosmetics are constituted of a mixture of chemical compounds obtained from either natural sources or synthetically created ones. The cosmetics that are prepared using plant products have cosmetic actions. Recently the increased use of botanicals in cosmetics is mainly due to their mild action and non-toxic nature. In cosmetics, both phyto-ingredients

and natural supplements are used. Natural products include oils, extracts, secretion, and phyto-ingredients including pure constituents obtained by various processes.

Shanmugapriya, et al. - Medicinal herbs have been used comprehensively against various diseases over a long phase of time. Nature has provided abundant plant wealth sources, which possess various medicinal values. The essential values of some medicinal plants have been known longer, but a large number of them remain unexplored. It is quite important to investigate the use to conduct experimental studies to describe their curative properties. The present study deals with phytochemical screening, and mineral, antioxidant, and antimicrobial activity of leaf extract of tridax procumbens.

Arun Kumar, et al.- Moisturizing cream is a semi-solid substance that can help improve skin tone. Compared to synthetic lotions, herbal creams have various advantages.. The majority of currently available creams provide more fairness to the face and are made from medications of synthetic origin, but they also have several undesirable side effects, including irritation and allergic reactions. These adverse effects are not present in herbal creams, which nourish the skin. The current study works objectives were to create and assess an herbal moisturizing cream that contains aloe vera gel, glycerine, rose water, and vitamin E capsules. The aforementioned herbal cream was visually and tactilely evaluated for parameters such as PH, viscosity, greasiness, washability, appearance, and homogeneity. According to the study, the extract composition and the cream F2's base are both more secure and secure.

Pooja Dave et. al. Masoor dal removes dead skin cells, resulting in a healthy shine. After regular usage, the lentil performs as an excellent cleaner, removing blackheads and skin patches. Promotes the skin's tone and moisturizes its scars of lightning and dark patches. Antioxidants remove dead cells and remove pollutants from the skin, making them smoother, cleaner, and more effective at treating blackheads and acne.

Siti Nurul Huda Mohammad et al: Nowadays, people are demanding naturally derived cosmetic products, including lip balms. However, there is a lack of studies on the physico-chemical properties of the formulated lip balms. Besides, there are few publications found on the use of beetroot as an active ingredient and colorant in lip balm formulation. Thus, this study aims to formulate a lip balm using beetroot; and test the physicochemical properties of formulated lip balms to get the three best formulations. The stability of these best lip balms was conducted for 4 weeks at room temperature and chiller conditions. Finally, a sensory evaluation was conducted to identify consumer acceptance of the best lip balms. Lip balms stored at room temperature remained steady, whereas lip balms stored in a chiller had little alterations. During the sensory test, all panelists preferred the same lip balm. The findings of this study can be applied to evaluate the potential of beetroot in the creation of various cosmetic products.

Mayuri Kadu et al: Cosmetics have been incredibly in demand since historical times. These days focus shifted toward naturally derived cosmetic products. Lip balm formulations are the most popular cosmetic products for enhancing the beauty of lips and adding a glamorous touch to makeup. Lip balms are a natural way to keep and encourage healthy lips. Current cosmetic lip products are based on the use of enormous chemical ingredients with various side effects. Hence in this work, an attempt has been made to study natural ingredients used to formulate natural lip balm. This page discusses the key substances used in natural lip balm, as well as their advantages and disadvantages. Natural lip balm can be manufactured utilizing naturally occurring bases, acids, extracts, color, and flavoring compounds that can be tested for their resilience to temperature fluctuations, pleasant flavor, and smoothness during application, adhesion, and simple purposeful removal, etc.

IV. MATERIALS & METHODOLOGY

TOMATO [14]

Synonyms: Lycopersicon lycopersicum
Lycopersicon esculentum

Biological source: It consist of fresh fruits of plant Solanum lycopersicum, Belonging to family Solanaceae.

Kingdom: Plantae

Order: Solanales

Family: Solanaceae

Genus: Solanum

Species: Solanum lycopersicum

Uses:

1. Potent Antioxidant.
2. Prevention of cancer. (cancers of prostate, lungs, stomach, colon & Breast)
3. Improves cardiovascular health. (regulates BP, lowers cholesterol)
4. Anti-tanning activity.
5. Supports bone health and help in bone repair. (Contains Ca^{+2}, Mg^{+2}, Vitamin K)

BEES WAX [15]

Synonyms: Bees wax, Cera-flava.

Biological source: Obtained from the honey comb of the bees Apis mellifera and other species of Apis

Family: Apidae,
Order: Hymenptera,
Geographical source: It is produced in France, Italy, West Africa, India.
Chemical constituents: Chief constituent is 80% Myricin (Myricylpalmitate), Cerotic acid, Melissic acid, Ceroleis.
Uses:

1. In preparation of ointments, plasters and polishes.
2. Also used in the manufacturing of candles, molds in dental and electronic industries.

COCOA BUTTER [16, 17]

Synonyms: Theobroma oil, cacao butter, cocao beans, semina theo-bromatis.
Biological Source: It is obtained from roasted seeds of Theobroma cacao Linn.
Family: Sterculiaceae.
Uses:

1. Cocoa butter is an emollient.
2. It is a natural antioxidant.
3. It adds a protective hydrating layer to lips, helping to protect them from drying out.

GLYCERINE [10, 18]

Glycerine is a natural polyol compound that can be derived from plant oils like coconut or soy, in herbal formulations vegetable derived glycerine is preferred due to its purity, biocompatibility and sustainability. It is colourless, odourless, and has a slightly sweet taste, making it ideal for lip care products
Uses:

- Hydrate the Outer Layer of the Skin.
- Relieve Dry Skin.

- Healing Properties.
- Moisturizer.
- Protects The Skin Barrier.
- Exfoliates Anti-Aging Smoothens the Skin.
- Soothens the Skin.
- Improves Complexion.

HONEY [15]

Honey has antiseptic and anti-inflammatory properties that help heal acne outbreaks and stop further infections. It acts as a preservative due to its high sugar content, low water activity and the presence of natural anti-microbial compounds like hydrogen peroxide and phenolic acids.

Synonym: Madhu Biological

Source: Honey is a sugary substance secreted by bees (Apisllifera, Apisdorsata) and placed in honeycomb.

Family: Apidae

Uses:

- Sweetening and demulcent substance.
- Beneficial nutrients for patients and infants.
- It is used as an antiseptic on burns
- It acts as preservative & antimicrobial agent

ALMOND OIL [19, 20]

Biological Source: It is an oil obtained from fully dried ripe seeds of various species of plant Prunus amygdalus, Prunus dulcis belonging to the family - Rosaceae

Kingdom: Plantae
Division: Tracheophytes
Class: Angiosperms
Order: Rosales
Family: Rosaceae
Sub-family: Purunaceae, Spiraeoideae
Genus: Prunus
Subgenus: Prunus subg. Amygdalus.
Uses:

1. Almond oil penetrates deep into skin tissues and moisturizes lips with its fatty acids.
2. Almond oil's anti-inflammatory qualities alleviate pain from chapped and sunburned lips.
3. Almond oil has anti-inflammatory qualities that reduce inflammation.
4. It infuses antioxidants into the lips, preventing wrinkles and other forms of skin damage.

COCONUT OIL [15]

Synonym: Copra oil, coconut butter, and coconut oil.
Biological Source: It consist of an oil Extracted or expressed from the seed of the coconut palm, Cocoas nucifera.
Family: Palmae
Chemical composition: At 20 °C, the oil is a semisolid made up of a mixture of glycerides in which 80-85% of the acids are saturated. It is primarily composed of lauric and myristic acid triglycerides.
Geographical Source: Coconut is widely distributed throughout the world. It is largely cultivated in African and southeast Asian countries. Coconut also known as copra is a dietary as well as industrial product throughout the world. Large quantity of oil is produced in India, Sri Lanka Malaysia, South Africa, China, Indonesia, and other Countries.
Uses:

- The balanced dietary supplements contain medium-chain triglycerides, which helps to promote skin elasticity and soothes dry & chapped lips.
- It hydrates and deeply nourishes the lips.

VITAMIN E [15]

- Vitamin E is a naturally occurring antioxidant and conditioner.
- By lessening the symptoms of aging and dry lips vitamin E contributes to the preservation of the lips smooth, youthful texture.
- Vitamin E accelerates the production of new cells on dry lips because it encourage cell turnover and regeneration.

Synonyms: Tocopherol

Biological source: Vitamin E is a fat-soluble antioxidant commonly derived from plant oils like sunflower, wheat germ, and soybean.

Chemical constituents: alpha-, beta-, gamma-, and deltato-copherol, gamma-, and deltatocotrienol.

Uses:

1. Protects against free radicals
2. Promotes cell regeneration.
3. Contains anti-inflammatory properties.
4. Reduces hyper pigmentation.

ROSE [21]

Synonym: rose, gulab

Biological Source: It consist of fresh flower obtained from plant Rosa centifolia.

Family: rosaceae.

Kingdom: Plantae

Division: Magnoliophyta

Class: Magnoliopsida

Order: Rosales

Family: Rosaceae **Genus -** Rosa

Species: Centifolia

Chemical constituents: The important chemical constituents isolated from flowers are Phenyl ethanol (43%), Geranyl acetate (15.6%), Geraniol (10.5%), Linalool (6.9%), Benzyl alcohol (3.3%), Benzaldehyde (1.5%), Nerol (5-10%), Citronellyl acetate (0.3%)

Uses:

1. Hydrates and soothes dry or irritated skin.
2. Acts as a natural astringent, tightening pores.
3. Rich in antioxidants, helps fight aging and free radicals.
4. Anti-inflammatory, reduces redness and swelling.
5. Antibacterial, helps prevent acne and infections.
6. Natural fragrance, adds a calming and pleasant scent to products.

EDIBLE GLITTER [22]

The edible glitters are mainly composed of food – grade ingredients such as Gum Arabic, starch or sugar derivatives, which makes them suitable for use in lip-balm.

Role of Edible Glitter in Herbal Lip Balm

1. Improves visual appearance
2. Provides glossy and attractive finish
3. Increases market appeal
4. Enhances consumer acceptance
5. Gives luxurious look to herbal formulations

Characteristics of Ideal Edible Glitter

- Non-toxic and food grade
- Smooth texture
- Stable in oils and waxes
- Odorless and tasteless
- Does not irritate lips
- Compatible with herbal ingredients

METHODOLOGY: PREPARATION OF TOMATO POWDER: [14, 27]

- **Collection of plant material-** The herbs used in formulation of herbal lip balm were collected. Choose fresh, ripe tomatoes, ideally those grown organically and free from any pesticide or herbicide treatments to ensure purity and safety of final product.
- **Cleaning and drying-** The tomatoes of species Solanum lycopersicum were rinsed with tap water to remove all residues. Cut the tomatoes into small pieces and spread on a clean and dry surface and sun dried for a period of time until it is completely dry.
- **Grinding-** Once the tomatoes are completely dry, grind them into a powder using mortar and pestle.
- **Storage-** Store the tomato powder in an air tight container to preserve its colour and nutritional value.

PREPARATION OF TOMATO INFUSED OIL: [27]

- The extraction of tomatoes was carried out using the infusion method.
- The ground tomatoes were mixed with coconut oil.
- The mixture was left overnight to allow the active ingredients from tomatoes to infuse into the oil.
- The mixture was then strained into the beaker by using a muslin cloth to separate infused oil from tomatoes.
- Store the tomato infused oil in an air tight bottle.

PREPARATION OF ROSE POWDER: [25]

- **Collection of plant materials-** The herbs used in formulation of herbal lip balm were collected. Choose fresh, organic roses. Red roses were chosen ideally those grown organically and free from any pesticide or herbicide treatments to ensure purity and safety of final product.
- **Cleaning and drying-** The flower petals of Rosa centifolia were rinsed with tap water gently and then spread on a clean surface. Further air dry the petals in shade for a period of time until they are completely dry.
- **Grinding-** Use a grinder to grind the rose petals into a fine powder using mortar and pestle.
- **Storage-** Transfer the powder into an airtight container to protect it from light and moisture.

PREPARATION OF ROSE INFUSED OIL[21, 26]

- Preparation of rose infused oil initiates with selection of carrier oil which serves as a medium for extracting the colour component from rose powder. The choice of carrier oil is important as it influences the stability and overall efficacy of infused oil.
- Infuse dry rose petal powder in a carrier oil (coconut oil) in a glass beaker.
- Heat the mixture on a water bath for 4 hours at a constant temperature of 60°C.
- Stir the mixture frequently to ensure thorough extraction.
- After completion of extraction, keep the beaker aside at room temperature to cool the mixture.
- Strain the mixture through muslin cloth for separation of rose infused oil.
- Store the rose infused oil in a clean glass bottle for further use.

FORMULATION: [23, 24]

- Weigh accurately all the required ingredients as per the formula.
- In this formulation white bees wax was melted in a clean porcelain dish on a water bath at temperature not exceeding 60°C. Label this as solution A.
- Take cocoa butter, glycerine, almond, oil and honey in another china dish and melt them in decreasing order of their melting points. Label it as solution B.
- Pour the content of porcelain dish B into porcelain dish A by observing the uniform temperatures of both the dishes and adding it drop by drop with vigorous stirring.
- Add required quantity of rose and tomato infused oil in the above formulation.
- Add the remaining additives like vitamin E oil & edible glitter in the formulation.
- Pour the above formulation in a clean, dry and air tight container and allow to settle at room temperature.

FORMULA FOR LIP BALM

INGREDIENTS	QUANTITY
Bees Wax	2 grams
Cocoa Butter	1 gram
Almond Oil	3.5 grams
Glycerine	1.5 grams
Tomato Infused Oil	4-5 drops
Rose Infused Oil	2-3 drops
Honey	1 drop
Vitamine E	0.4 grams
Ediable Gliter	Q.S.

V. RESULTS AND DISCUSSION

EVALUATION OF LIPBALM: [8]

ANTIOXIDANT ACTIVITY OF TOMATO:[28]

1. **Preparation of phosphate buffer (pH 7.4)** – To prepare 100 ml of buffer solution add 0.238 grams of disodium hydrogen phosphate, 0.019 grams of potassium dihydrogen phosphate, 0.8 grams of sodium chloride in volumetric flask. Make up the volume up to 100 ml with distilled water.
2. **Preparation of 40 mM hydrogen peroxide solution** – 2.27 ml of concentrated (6%) hydrogen peroxide solution was added in volumetric flask. Make up the volume up to 100ml with buffer pH 7.4
3. **Preparation of tomato extract** – Homogenize tomato in water, filter and use directly or dilute as needed.
4. **Assay procedure** – Mix 1ml of tomato extract in 0.6 ml of H_2O_2 solution to generate the free radicals and solution was incubated at room temperature for 10 mins to complete the reaction. The absorbance was estimated at 230 nm in a spectrophotometer against a blank solution containing phosphate buffer solution without hydrogen peroxide. The percentage scavenging activity of H_2O_2 by extract was determined by using the following equation:

Percent scavenge (H_2O_2) $= A0 - A1 / A0 \times 100$

where A0 is the absorbance of the control, A1 is the absorbance in the presence of the extract and standard.

REPORT :

Sr. NO	Absorbance of Control	Absorbance Of Extract
1	1.10	0.32
2	1.20	0.30
3	1.07	0.35
4	1.12	0.32

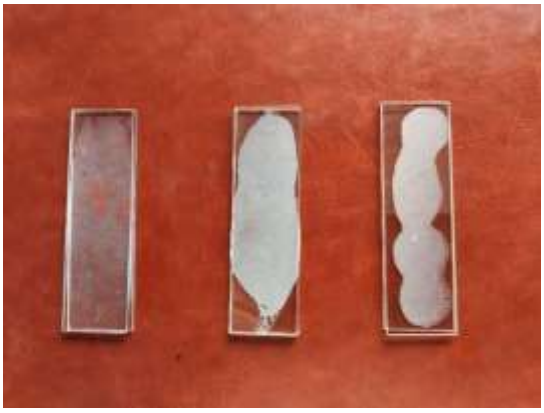
- Hydrogen peroxide radical scavenging activity of tomato extract was estimated.
- The percentage scavenging activity of tomato extract by hydrogen peroxide assay was found to be 71.4%, which on comparison against standard antioxidant activity of ascorbic acid which is in range of 80-95%
- On comparison with standard, the scavenging activity of tomato extract was found to be acceptable.

Melting Point:

1. For melting point, the sample of lip balm was taken in a glass capillary whose one end was sealed by flame.
2. The capillary containing formulation was dipped in liquid paraffin inside the melting point apparatus.
3. Melting point was determined visually, and melting point was reported.

REPORT – The melting point of lip-balm was found to be 65-72°C.

Test for spreadability:



The product was applied (at room temperature) repeatedly onto a glass slide to visually observe the uniformity in the formation of the protective layer and whether the lip-balm fragmented, deformed or broke during application.

REPORT – The spreadability of the prepared lip-balm was found to be GOOD.

G– Good: uniform, no fragmentation; perfect application, without deformation of the lip balm.

pH measurement:

- The pH study was carried out by dissolving 1gm of sample into 100 ml chloroform.
- The pH was measured using a pH meter.

REPORT- The pH of lip-balm formulation was found to be 6.7-7.1

ORGANOLEPTIC PROPERTIES:

Colour	Pink To Red
Odour	Pleasant
Taste	Tasteless
Appearance	Smooth

VI. DISCUSSION:

- ▪ The study is based on the Formulation & evaluation of Herb-infused lip-balm with edible glitter, which acts as a cosmeceutical with blend of natural ingredients.
- ▪ The ingredients were selected based on their cosmeceutical properties along with their safety profile & applications.
- ▪ The Tomato (Solanum lycopersicum) is the key component of this formulation as it contains high concentration of lycopene, Vitamin C and flavonoids, which acts as a antioxidant and protects the lips from environmental pollutants and UV-damage.
- ▪ Rose-infused oil (Rosa centifolia) was added for its hydrating & soothing property along with pleasant essence.
- ▪ Cocoa butter and glycerine provides moisturizing activity and glycerine particularly acts as a humectant.
- ▪ Vitamin E aids in brightening of lips along with anti-oxidant activity.
- ▪ Honey serves as natural preservative.
- ▪ The unique feature of this formulation is the incorporation of edible-glitter, which adds distinctive visual effects along with its safety profile on accidental ingestion.

- ▪ The formulated lip-balm was evaluated for following parameters,
  - pH- 6.9-7.1 (Close to natural pH of lips)
  - Melting point - 65°C to 72°C
  - Spreadability – Good
  - Antioxidant activity – 71.4%
  - Organoleptic properties

So, the results shows that the formulated lip-balm met the desired specifications for use as herbal, multifunctional product.

VII. CONCLUSION

The formulation and evaluation of herb-infused lip balm with edible glitter has shown the ability to formulate a cosmeceutical product that has dual benefits of natural herbs along with promoting attractiveness. The inclusion of herbal ingredients such as tomato infused oil, rose infused oil, cocoa butter, almond oil, glycerine, honey and vitamin E ensures that the product is effective for moisturization, healing of dry or chapped lips and also ensures safety. It is beneficial for long term usage.

The inclusion of edible glitter adds a present-time and trendy component to the formulation which attracts the consumers. Primarily the use of edible glitter does not compromise the safety, effectiveness and stability of the lip balm.

The physiochemical parameters evaluated the product's compatibility. The melting point and pH value compliments its use in various environmental conditions. The spreadability and texture of the lip balm provide a satisfactory customer experience.

In addition to this, the antioxidant activity of tomato extract was found acceptable thus it protects the lips from oxidative stress.

As a result, the study has obtained its objectives by establishing a stable, aesthetically pleasant and therapeutically effective lip balm using ingredients from natural sources. This formulation is useful for common lip problems like cracking, dryness and dullness. It also addresses the increased demand for the herbal skincare products. This product ensures further development and commercialization in herbal cosmetic industry and further studies could include microbial testing, extended stability studies and consumer trials to further validate its potential.

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