

PREPARATION AND CHARACTERIZATION OF HERBAL LIPSTICKS

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ABSTRACT

The present study aims to formulate and evaluate herbal lipsticks using natural ingredients to provide a safe and effective alternative to conventional synthetic lipsticks. Herbal cosmetics are increasingly preferred for their biocompatibility, safety, and environmental sustainability. In this work, lipsticks were prepared using natural colorants such as beetroot extract, rice powder, and rose petals, along with beeswax, lanolin, and castor oil as base materials and emollients. The formulated lipsticks were evaluated for various physicochemical parameters, including color, texture, pH, melting point, breaking point, spreadability, hardness, and stability under different temperature conditions. Sensory analysis was conducted to assess color appeal, smoothness, and ease of application. The results revealed that all formulations exhibited acceptable physical characteristics, uniform color distribution, smooth texture, and good stability without any phase separation or microbial growth. The pH values were within the acceptable range for lip applications, indicating non-irritancy. Among the prepared formulations, the one containing beetroot extract showed the most desirable color intensity and consumer acceptance. The study concludes that herbal lipsticks formulated with natural ingredients can serve as a safe, cost-effective, and environmentally friendly alternative to commercially available chemical-based products, promoting the use of herbal resources in cosmetic formulations.

KEYWORDS: Herbal cosmetics, Lipstick, Natural colorants, Beeswax, Evaluation, Stability.

INTRODUCTION

The word cosmetics is defined as "Substances of diverse origin, scientifically compounded and used to cleanse, alleviate skin troubles, cover up imperfections, and beautify". In this work, the term is used more broadly to include oral hygiene as well. Cosmetics are substances used to improve the appearance of the human body. Cosmetics include skincare creams, lotions, powders, perfumes, lipsticks, nail paint, eye and facial cosmetics, colored contact lenses, hair colors, hair sprays, deodorants, baby goods, bubble bath, and a variety of other items. These products are in high demand in both developing and developed nations.^[1]

Cosmetic pharmaceutical products, or "cosmeceuticals," are designed to enhance the appearance and health of the skin by offering a particular outcome, such as sun protection, acne control, or anti-wrinkle benefits.

Cosmeceuticals combine physiologically active chemicals with cosmetics to provide medicinal or drug-like benefits and enhance skin beauty. Cosmeceuticals are topical formulations that use active chemicals to improve skin function.

Cosmetics have become an essential aspect of any woman's lifestyle. Herbal cosmetics combine permitted cosmetic elements to create unique cosmetic benefits.^[1-4] It's generally accepted that natural cosmetics are safer than chemical-based ones. Additionally, natural cosmetics can shield the skin from UV damage.^[1-2] Lip color in the form of crayons, or lipsticks as they are more often known, is one of the most popular cosmetics used today.^[3] It can be either natural or chemical.

Herbs used in cosmetics have various qualities such as antioxidants, anti-inflammatory, antiseptic, and

antibacterial. Herbal products promise no negative effects, unlike synthetic alternatives. Herbal cosmetics are a current trend in beauty and fashion. The herbal cosmetics sector is thriving, with a global market for its products. Today's cosmetic market offers numerous brands. Despite the market's growth, there is always room for innovative products that meet consumer demands for quality and natural ingredients. Lipstick is a cosmetic product that colors and protects the lips from external effects. Lip coloring originated in primordial times. The usage of plant products has risen, resulting in a larger range of colors, textures, and gloss options. The lipstick comes in a wide range of colors to meet women's evolving preferences.

The dyes used to create lipstick hues are extremely dangerous for human consumption. The primary ingredients used to make synthetic dyes are coal tars, which can result in dry lips, rashes, allergies, and nausea. In more extreme cases, it may cause cancer or even death.^[4-5] Natural colors are increasingly being used in lipstick due to concerns about synthetic colors' adverse effects. Natural colors are derived from plants, insects, and algae.^[6-7] Synthetic lipstick employs synthetic dyes to give color, which can be harmful to people. Synthetic colors such as mercury, lead, and chromium can be toxic to the human body.^[8] Lipsticks offer an appropriate way to either protect the lips from the impacts of wind, UV rays, and cold, dry conditions, or to refresh makeup by dyeing it. Good drug candidates for nutraceutical lipsticks have anti-inflammatory, anti-irritating, calming, and local effects on the lips.

Herbal lipsticks are formulations prepared using plant-derived ingredients such as natural colorants, waxes, oils, and emollients. These components not only impart attractive color and texture but also provide nourishment and protection to the lips. Natural pigments such as beetroot, rice water, and rose extracts offer appealing shades while being free from harmful heavy metals and synthetic colorants. Emollient bases like beeswax, shea butter, and coconut oil contribute to smooth application and help prevent lip dryness and cracking. Because of its anti-irritating, moisturizing, calming, and non-toxic natural agent capabilities, beet root powder was chosen as the preferred medication for the treatment of skin cracks, ulcers, wounds, and eruptions. This study's goal was to create a nutritional lipstick that substituted traditional synthetic lipstick vehicles by using honey and rice water as natural excipients, rice water serves as a multifunctional natural ingredient in herbal lipsticks—enhancing moisturization, smoothness, stability, and antioxidant protection—while supporting the development of safe, effective, and eco-friendly cosmetic formulations and honey aids in healing and encourages tissue regeneration. Hydrogen peroxide is primarily responsible for honey's antibacterial properties.^[9-11]

MATERIALS AND METHODS

Selection of herbs

Herbal lipstick ingredients were chosen through a literature survey. Ingredients include castor oil, beeswax, beet root juice, rice water, rose extract, and vanilla essence. The author used the following method during this inquiry.^[12-13]

BEET ROOT

Synonym: Beta vulgaris rubra, Chukanda



Biological source

It consists of fresh root of Beta vulgaris.

Family

Amaranthaceae.

Chemical constituents

It consist of multiple biologically active phytochemicals including betalains, flavonoids, polyphenols, saponins and inorganic nitrate, it is arich source of diverse minerals such as sodium, phosphorous, calcium, magnesium, copper, iron, zinc.

BEET ROOT EXTRACTION

Peel the beetroot and cut it into uniform-sized fine slices. Spread it over a butter paper, cover with a fine mesh and allow it to shade dry for a day. If there is any moisture left dry in it in an oven. Take the dried beetroot and grind it into a fine powder. Pass the powdered material through a fine sieve. Check for any grainy particles. Sieve it again if required. Weight the amount of powder and pack it.^[14]



METHOD OF PREPARATION

RICE WATER**Synonym:** paddy,**Biological Source:** Rice is obtained from the seeds of *Oryza sativa*,**Family:** Poaceae**Chemical Constituents**

Rice contains starch (amylose, amylopectin), proteins (albumin, globulin, prolamin, glutelin), lipids (triglycerides, phospholipids, gamma-oryzanol, tocopherols), vitamins (B-complex, E), phenolic compounds (ferulic acid, flavonoids, anthocyanins), minerals (Si, Zn, Mg, Fe), and phytosterols. It contains

Rice water extraction

Clean the rice thoroughly by rinsing it 2–3 times with distilled water to remove impurities and surface starch.

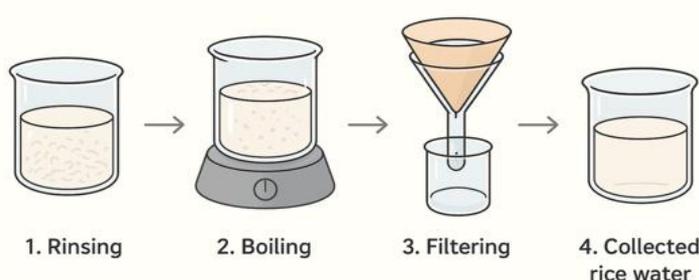
Add the cleaned rice to 250 mL of distilled water in a beaker.

Boil the mixture for 10–15 minutes on a medium flame until the water turns milky white.

Allow it to cool to room temperature.

Filter the mixture through muslin cloth or Whatman filter paper to separate the rice grains.

Collect the filtrate (rice water) and store it in an airtight amber bottle at 4–8°C until use.^[14]

**FORMULATION OF LIPSTICK**

S.no	Ingredients	Function	Quantity (%)	Remarks
1.	Beeswax	Base, gives firmness, binding agent	20–25	Provides structure and stability
2.	Lanolin	Emollient, moisturizing	5–10	Softens lips, prevents dryness
3.	Castor Oil	Solvent, glossy texture	15–20	Provides shine and smooth application
4.	Rice Water (extract)	Skin conditioning, moisturizing	10–15	Provides hydration and mild soothing effect
5.	Beetroot Extract/Powder	Natural colorant (red/pink)	5–10	Imparts natural pink/red hue
6.	Rose Extract	Fragrance, soothing, antioxidant	2–5	Adds pleasant aroma and mild skin benefits
7.	Vanilla Essence	Flavoring agent	1–2	Enhances fragrance, taste

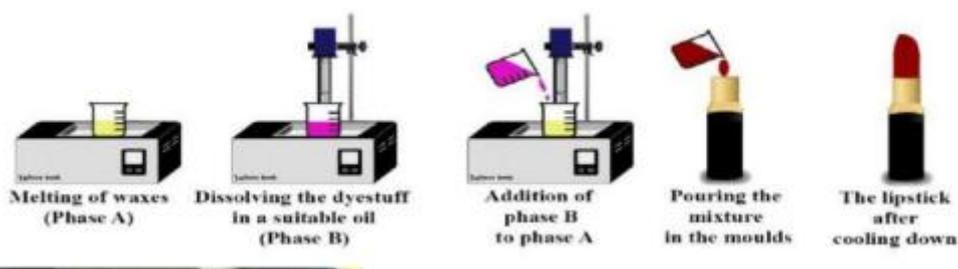
METHOD OF PREPARATION

- Melt and mix the raw materials separately based on melting point.
- Heat solvents, oils, and waxes separately in stainless steel or ceramic containers.
- Combine solvent and liquid with the color pigments.

4. Combine the pigment mass with the hot wax.

5. Pour the mixture into tubing moulds, chill, and separate the lipstick.

6. Remove it from the mould and place it in the lipstick case.^[15]



EVALUATION OF LIPSTICK

1. Melting point
2. Breaking point
3. Hardness test
4. Skin irritation test:
5. Perfume stability:
6. pH parameters
7. Spreadability test

1. Melting Point: The melting point of a product is determined in order to ascertain its storage properties. To prevent the feeling of dryness or friction when applying lipstick, the starting point of the base should be between 60 and 65°C.

The capillary tube method is used to evaluate the melting point of herbal lipstick. The capillary is connected to the thermometer and filled with lipstick. The melting point is the temperature at which lipstick melts.^[16]

2. Breaking point: Weight at breakage and value (10gm) at a specific 30-second interval. The tensile strength of a lipstick is determined using the breaking point test.

Apply lipstick horizontally, one inch from the edge of the support. It is believed that when the weight is increased by a specific quantity, the breaking point occurs.^[16]

3. Hardness test: Measure the penetration of a standard needle or texture analyzer into the lipstick. Ensures adequate firmness to maintain shape while allowing smooth application.^[17,18]

4. Skin irritation test: Apply a small amount of lipstick on a patch of skin (usually inner forearm). Cover with sterile cotton or patch. Leave for 24–48 hours. Observe and record any signs of irritation: redness, swelling, itching, or rash.^[17,18]

5. Perfume stability: The stability of perfume can also be evaluated by periodically comparing it to brand-new lipstick while keeping lipsticks in an oven set at 40 degrees Celsius.^[16]

6. pH parameter : Take 1 g of lipstick and dissolve or disperse in 10 mL of distilled water. Stir thoroughly to form a uniform suspension. Measure the pH using a calibrated digital pH meter at room temperature (25 °C). Calibrate the pH meter using standard buffers (pH 4.0, 7.0, 9.0) before measurement. Record the pH value in triplicate for accuracy. Average the readings to report the final pH.^[17,18]

7. Spreadability: Apply a fixed amount of lipstick on a glass plate and press with another plate under a defined weight. Measure the diameter of the spread; higher spread indicates better application ease.^[17,18]

RESULT

Parameter	Observation / Result	Interpretation
Appearance	Smooth, uniform, bright red	Suitable for cosmetic use
Melting Point (°C)	57–60	Stable under normal storage and application conditions
Hardness test	2.5 mm	Adequate firmness for application
Spreadability (mm)	25–28 mm	Smooth and even application
pH	5.5–5.8	Skin and lip compatible
Skin Irritation Test	No redness or swelling observed	Non-irritant, safe for human use
Taste Test	Mild, pleasant taste	Acceptable for lips
Fragrance Stability	No significant change after 3 months	Stable under normal and accelerated conditions
Color Stability	No fading or discoloration	Maintains aesthetic quality

DISCUSSION

The formulated herbal lipstick demonstrated excellent physical, chemical, microbiological, and sensory properties, confirming its suitability as a safe and effective cosmetic product. Physically, the lipstick had a smooth, uniform appearance, soft texture, adequate hardness, and good spreadability, ensuring ease of application and consumer acceptability. The melting point (57–60 °C) indicated stability under normal storage and application conditions.

Chemically, the lipstick showed a pH of 5.5–5.8, compatible with skin and mucous membranes, and a moisture content of 2.2%, low enough to prevent microbial growth. The herbal fragrance remained stable over 3 months under normal and accelerated storage, indicating effective formulation and fragrance retention.

Sensory evaluation showed the lipstick to be non-irritant with no redness, swelling, or itching, and having a mild, pleasant taste. Additionally, color stability was maintained throughout the study, highlighting the stability of the natural pigments used.

CONCLUSIONS

The formulated herbal lipstick exhibited excellent physical, chemical, microbiological, and sensory properties, indicating its suitability as a safe and effective cosmetic product. It showed smooth texture, uniform color, adequate hardness, and good spreadability, along with a pH compatible with skin and lips and low moisture content to ensure stability. The lipstick was non-irritant, safe for human use, and highly acceptable to users, with stable fragrance and color over the study period.

Overall, this study demonstrates that herbal ingredients can be effectively incorporated into lipsticks to produce products that are safe, stable, and cosmetically appealing, providing a natural alternative to conventional lipsticks.

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