Herbal Formulations of Dual Shade Lipstick by Using Black Grape Peel and Palash Leaf.

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Abstract: The beauty industry is undergoing a major shift toward herbal and plant-based formulations, largely due to their safety, biocompatibility, and multifunctional therapeutic effects. Among cosmetic products, lipsticks are particularly popular for enhancing facial aesthetics. However, conventional lipsticks that rely on synthetic dyes and chemical additives have been associated with several adverse effects such as lip darkening, allergic reactions, and potential systemic toxicity with prolonged use.

This review explores the potential of Black Grape (Vitis vinifera) peel extract and Palash (Butea monosperma) leaf extract as natural colorants and antioxidants in the formulation of a dual-shade herbal lipstick. The peel of black grapes is rich in anthocyanins, resveratrol, and phenolic compounds, producing a deep purple to reddish coloration with potent antioxidant activity. In contrast, Palash leaves are abundant in flavonoids and tannins that impart a reddish-brown hue along with antimicrobial and wound-healing properties.

Blending these two natural extracts results in a dual-shade lipstick that not only enhances beauty but also delivers therapeutic benefits such as antioxidant, antimicrobial, and UV-protective effects. The review discusses the phytochemical profiles of these plants, formulation methods, evaluation parameters, benefits, and limitations.

With growing awareness about the health and environmental hazards of synthetic cosmetics, the development of dual-shade herbal lipsticks offers an innovative, eco-friendly, and consumer-conscious alternative. These formulations promise to meet the rising demand for safe, multifunctional, and sustainable cosmetics. Future research should focus on improving pigment stability, standardizing extraction techniques, and conducting clinical studies to facilitate large-scale commercialization of such herbal products.

Keywords: Herbal cosmetics; Dual-shade lipstick; Black grape peel; Palash leaves; Natural colorants; Anthocyanins; Flavonoids; Antioxidant activity; Phytoconstituents; Sustainable cosmetics; Lip care.

I. INTRODUCTION

Cosmetics have been an integral part of human culture since ancient times, serving purposes that go beyond beautification — including self-expression, social identity, and confidence enhancement. Among these, lipsticks have remained one of the most widely used cosmetic products across all age groups and societies. However, modern commercial lipsticks often rely heavily on synthetic waxes, dyes, and preservatives, many of which have been linked to undesirable effects such as allergic reactions, pigmentation, dryness, and systemic toxicity with prolonged use. Some synthetic pigments, such as coal-tar derivatives and azo dyes, have even been reported to contain carcinogenic heavy metals like lead, cadmium, and chromium.

The growing consumer preference for natural and herbal alternatives has driven a significant transformation in the cosmetics industry. Herbal cosmetics — also known as plant-based or green cosmetics — are formulated using naturally derived ingredients such as botanical extracts, essential oils, natural waxes, and vegetable butters. These ingredients not only beautify but also provide therapeutic benefits like nourishment, hydration, and protection. They are biocompatible, biodegradable, and environmentally friendly, making them ideal for long-term use.

Rise of Herbal Lipsticks;

Herbal lipsticks have gained considerable attention as safer alternatives to synthetic formulations. These lipsticks use vegetable colorants and natural emollients such as oils and butters to achieve rich shades while simultaneously moisturizing and protecting the lips. In addition, herbal lipsticks often exhibit antioxidant, antimicrobial, and UV-protective

properties due to the phytochemicals present in plant-based ingredients.

Innovation: Dual-Shade Concept;
The concept of dual-shade lipstick—offering two distinct colors within a single stick—represents a novel and practical advancement in cosmetic formulation. It allows consumers to choose between shades or blend them to create custom tones, enhancing versatility and convenience while reducing product costs. This duality also appeals to modern users seeking multi-functional, sustainable, and cost-effective beauty solutions.

Choice of Natural Colorants;
Two highly promising natural pigments for herbal lipstick formulation are Black Grape (Vitis vinifera) and Palash (Butea monosperma).

- Black Grape Peel Extract is rich in anthocyanins, flavonoids, tannins, and resveratrol, which produce a purple-red hue and deliver potent antioxidant, anti-aging, and photoprotective benefits. These bioactive compounds help prevent lip damage from oxidative stress, UV exposure, and premature aging.
- Palash Leaf Extract contains flavonoids, chalcones, and tannins, imparting a reddish-brown color along with antimicrobial, anti-inflammatory, and wound-healing activities. Traditionally used in Ayurveda for treating skin disorders, Palash provides both coloration and therapeutic value.

Eco-Friendly and Sustainable Perspective;
Another major advantage of using plant-derived pigments is their alignment with sustainability and green chemistry principles. Black grape peel, for instance, is a by-product of the wine and juice industries that is often discarded as waste. Utilizing it as a source of anthocyanins not only provides an eco-friendly pigment but also promotes waste valorization and circular economy. Similarly, using Palash leaves—readily available and renewable—reduces dependence on non-biodegradable synthetic dyes.
Need for Research and Development;
Despite their potential, herbal formulations face certain challenges, including poor pigment stability, pH-dependent color variation, and difficulty in standardizing extract quality. However, advancements in formulation technologies, such as encapsulation, natural stabilizers, and controlled extraction methods, offer promising solutions to these limitations.
In light of these considerations, this review explores the formulation, characterization, and evaluation of a dual-shade herbal lipstick prepared from Black Grape peel and Palash leaf extracts. The study emphasizes their phytochemical composition, coloring potential, therapeutic properties, formulation methods, and evaluation parameters, along with the sustainability and commercial prospects of such products in the modern cosmetic industry.
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II.FLAVOURING AGENT

The flavouring agent is an essential component of any lipstick formulation, as it not only enhances consumer appeal but also helps mask the natural odour of the base ingredients. In herbal lipsticks, flavouring agents are preferably natural essential oils or plant-based extracts that are safe for topical use and compatible with other formulation components.

In the present formulation, vanilla essence was selected as the flavouring agent. Vanilla is well-known for its pleasant aroma, mild sweetness, and soothing properties. Its natural origin makes it ideal for herbal formulations, providing an appealing fragrance while avoiding synthetic additives that may cause irritation or allergic reactions. Additionally, the subtle scent of vanilla complements the natural pigments derived from the plant extracts without overpowering them.

III.EXTRACTION PROCESS

To obtain the natural colourants and bioactive compounds from Black Grape peel (Vitis vinifera) and Palash leaves (Butea monosperma), the solvent extraction method was employed. This method is efficient, cost-effective, and capable of extracting a wide range of phytochemicals such as anthocyanins, flavonoids, tannins, and phenolic acids that contribute to both the colouring and therapeutic properties of the final formulation.

1. Preparation of Plant Material

- Black Grape Peels: Fresh black grapes were thoroughly washed with distilled water to remove dirt and surface residues. The peels were carefully separated, air-dried in the shade for several days to preserve sensitive compounds, and then finely powdered using a mechanical grinder.
- Palash Leaves: Fresh leaves of Butea monosperma were collected, cleaned, shade-dried, and powdered in a similar manner to ensure uniform particle size and optimal extraction efficiency.

2. Solvent Extraction

The powdered samples were subjected to ethanolic extraction due to ethanol's strong ability to dissolve both polar and non-polar phytoconstituents while maintaining a non-toxic, eco-friendly profile. Approximately 25 g of each dried powder was extracted with 100 mL of ethanol using the Soxhlet extraction method for 6–8 hours. The extracts were then concentrated under reduced pressure using a rotary evaporator to remove the solvent and obtain a semi-solid mass of concentrated pigment.

3. Storage of Extracts

The concentrated extracts were stored in airtight amber glass containers at 4°C to protect them from light, oxidation, and microbial degradation. These stored extracts were later incorporated into the lipstick base during formulation.

Rationale for the Extraction Method;

The selection of ethanol as the solvent ensures that the extract remains safe, stable, and suitable for cosmetic use, unlike other solvents such as methanol or acetone, which are toxic and unsuitable for topical applications. Shade drying and cold storage help preserve heat-sensitive phytochemicals, maintaining the integrity of anthocyanins and flavonoids responsible for the natural coloration and antioxidant activity of the extracts.

This process ultimately yields richly pigmented, bioactive extracts that are ideal for developing a dual-shade herbal lipstick with both aesthetic and therapeutic properties.

IV.FORMULATION OF HERBAL LIPSTICK

The formulation of a dual-shade herbal lipstick aims to combine both aesthetic appeal and therapeutic benefits using naturally derived ingredients. The lipstick base was prepared using natural waxes, oils, and butters to ensure smooth texture, ease of application, and lip nourishment. The colour shades were obtained by incorporating Black Grape peel extract and Palash leaf extract in appropriate proportions to produce two distinct yet complementary tones.

Fig 1- Black Grapes

Fig 2- Palash Leaves

Table- Composition of the Herbal Lipstick

Ingredients	Purpose / Function
Beeswax	Provides structure, gloss, and hardness
Carnauba wax	Enhances melting point and firmness
Cocoa butter	Acts as an emollient; adds smoothness and hydration
Shea butter	Moisturizing and healing properties
Castor oil	Gives shine, smoothness, and uniform color dispersion
Olive oil	Acts as a natural moisturizer and antioxidant
Coconut oil	Softens lips; provides antimicrobial protection
Vitamin E oil	Natural antioxidant; prevents lipid oxidation
Vanilla essence	Natural flavouring and fragrance agent
Black Grape peel extract	Natural colorant; provides purple-red shade and antioxidant activity
Palash leaf extract	Natural colorant; provides reddish-brown tone and antimicrobial activity
Natural preservative (e.g., benzoin resin or rosemary extract)	Prevents microbial growth and extends shelf life

2. Preparation Method

The herbal lipstick was prepared using the fusion method, which ensures homogeneity and smooth texture. The procedure followed these steps:

1. Melting of Waxes: Measured quantities of beeswax and carnauba wax were placed in a clean beaker and melted in a water bath at 70–75°C until fully liquefied.
2. Addition of Butters and Oils: Once the waxes were melted, cocoa butter and shea butter were added, followed by castor oil, olive oil, and coconut oil. The mixture was stirred continuously to ensure uniform blending.
3. Incorporation of Active Extracts: The temperature of the mixture was reduced slightly (to around 60°C) before adding Black Grape peel extract and Palash leaf extract. These extracts were incorporated one at a time to create two different colour phases within the same batch, forming a dual-shade effect.
4. Addition of Antioxidant and Flavour: After thorough mixing, Vitamin E oil (antioxidant) and vanilla essence (flavouring agent) were added to the molten mass.
5. Pouring and Solidification: The molten mixture was poured into pre-lubricated lipstick moulds and allowed to cool at room temperature, followed by refrigeration for 15–20 minutes to achieve proper solidification.
6. Demoulding and Finishing: The lipsticks were carefully removed from the moulds and gently polished with soft tissue to obtain a glossy finish.

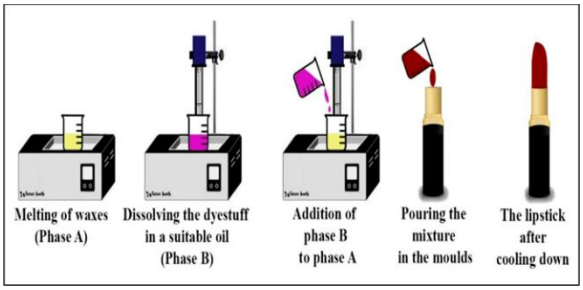

Fig 3- Formulation Method

3. Storage

The prepared lipsticks were stored in sanitized, airtight lipstick containers at cool room temperature to prevent sweating, microbial growth, and pigment fading.

4. Key Features of the Formulation

- Completely natural and eco-friendly ingredients
- Dual-shade finish combining Black Grape's purplish-red tone with Palash's warm reddish-brown hue
- Excellent spreadability, smooth texture, and moisturizing effect
- Free from synthetic dyes, parabens, and heavy metals
- Provides therapeutic benefits such as antioxidant, antimicrobial, and photoprotective effects

V.EVALUATION OF HERBAL LIPSTICK;

A series of physicochemical and performance evaluations were conducted to assess the quality, safety, and functionality of the formulated dual-shade herbal lipstick. These tests were designed to ensure the product met the essential parameters of stability, aesthetics, and usability expected from a cosmetic lip product.

1. Colour and Appearance

The visual inspection of the lipstick confirmed two distinct natural shades — a purplish-red tone from the Black Grape extract and a reddish-brown hue from the Palash extract. Both shades exhibited a smooth, uniform finish with no signs of granularity or phase separation. The lipsticks displayed a glossy surface and pleasant aroma, making them appealing to consumers.

2. Melting Point

The melting point is an important parameter that affects the stability and spreadability of lipsticks, particularly under varying temperature conditions. The herbal lipsticks showed a melting point between 60°C and 65°C, indicating adequate firmness and resistance to deformation under normal storage and application conditions.

3. Breaking Point

This test determines the mechanical strength of the lipstick. The formulated lipsticks were placed horizontally on a support and subjected to a gradually increasing weight until they broke. The average breaking point was above 1 kg, demonstrating sufficient hardness and durability for routine use.

4. Softening Point

The softening point reflects the temperature at which the lipstick begins to lose its structure. The lipsticks exhibited a softening point around 55°C, confirming good resistance to temperature fluctuations and minimal risk of melting during handling.

5. Surface Anomalies

The lipsticks were visually examined under proper lighting for cracks, air bubbles, and surface irregularities. The surface appeared smooth, glossy, and uniform, without any physical imperfections, indicating successful fusion and cooling during the preparation process.

6. Spreadability

A smooth and uniform spread on application is a desirable feature in lip products. The prepared herbal lipsticks demonstrated excellent spreadability with a non-greasy texture, gliding easily over the lips and leaving behind a uniform, lustrous layer of color.

7. pH Determination

The pH of the lipstick was measured by dissolving a small quantity in a 50% alcohol–water mixture and testing it using a calibrated digital pH meter. The pH was found to be 5.5–6.0, which is within the ideal range for lip products and compatible with the natural pH of human skin, ensuring it is non-irritating and safe for prolonged use.

8. Perfume Stability

To evaluate the stability of fragrance, the lipsticks were stored at room temperature and periodically assessed for any change in aroma. The vanilla fragrance remained stable and pleasant throughout the study period, confirming the compatibility of the flavouring agent with the formulation base.

9. Ageing Stability

Ageing studies were performed by storing the lipsticks at different temperature conditions — 8°C, 25°C, and 45°C — for a period of one month. Samples were evaluated for any changes in colour, texture, gloss, and odour. No significant variations were observed, confirming the excellent physical and chemical stability of the formulation.

10. Melting Resistance Test

The lipsticks were placed in a controlled environment chamber at 37°C for 24 hours to check for sweating or deformation. The formulation retained its original shape and integrity, indicating good temperature resistance suitable for tropical climates.

11. Skin Irritation Test

A patch test was conducted on healthy volunteers by applying a small amount of lipstick to the inner forearm. No signs of redness, itching, or irritation were observed after 24 hours, confirming that the product is dermatologically safe and non-allergenic.

12. Colour Retention and Adhesion

The colour retention ability was assessed by applying the lipstick to glass slides and lips, followed by gentle rubbing and water rinsing. The herbal lipsticks exhibited moderate-to-good colour retention and satisfactory adhesion, leaving a subtle stain even after wiping — attributed to the presence of natural anthocyanins and flavonoids.

13. Microbial Stability

Microbial testing showed no visible growth of bacteria or fungi during the observation period. The inclusion of natural preservatives such as benzoin resin and the antioxidant properties of plant extracts contributed to maintaining the product's microbial stability.

14. Overall Evaluation

All evaluation parameters indicated that the dual-shade herbal lipstick met the essential quality criteria of cosmetic formulations. It demonstrated excellent physical stability, smooth application, adequate hardness, pleasant aroma, skin compatibility, and long-lasting colour, confirming the success of the formulation.

VI.CONCLUSION

The present study successfully demonstrates the formulation and evaluation of a dual-shade herbal lipstick using Black Grape (Vitis vinifera) and Palash (Butea monosperma) extracts as natural colorants and bioactive agents. The developed product fulfills the essential quality standards expected of modern cosmetic formulations, offering a safe, stable, and eco-friendly alternative to conventional synthetic lipsticks. The Black Grape peel extract, rich in anthocyanins and resveratrol, provided a deep purplish-red shade with potent antioxidant and anti-aging properties. Meanwhile, the Palash leaf extract, containing flavonoids and tannins, contributed a reddish-brown tone along with antimicrobial and wound-healing benefits. The dual incorporation of these extracts resulted in a visually appealing lipstick that not only enhances appearance but also nourishes and protects the lips.

All evaluation parameters — including melting point, hardness, pH, spreadability, colour retention, fragrance stability, and microbial resistance — confirmed the formulation's high quality and user safety. The product exhibited excellent stability, smooth application, and favourable sensory attributes, making it both functionally effective and cosmetically elegant.

Beyond its cosmetic function, the herbal lipstick also represents a step toward sustainable beauty innovations. The use of fruit and leaf extracts as natural pigments promotes waste valorization, reduces dependency on synthetic chemicals, and aligns with the global trend of green and cruelty-free cosmetics.

However, further research is recommended to address certain formulation challenges, such as improving colour stability, standardizing extraction procedures, and conducting comprehensive clinical trials to validate long-term safety and efficacy. Future advancements in natural pigment stabilization and nanoformulation technologies could further enhance the performance and commercial viability of such herbal cosmetics.

In conclusion, the formulated dual-shade herbal lipstick exemplifies a promising fusion of beauty, health, and sustainability. By harnessing the therapeutic and aesthetic potential of Black Grape and Palash extracts, this product serves as a safe, natural, and environmentally conscious alternative to conventional lipsticks — paving the way for the next generation of plant-based cosmetic innovations.

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