Research Article

Harnessing Nature's Hues: Preparation and Evaluation of Herbal Lipsticks with Natural Pigments

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ABSTRACT

Adorning the skin, especially the skin on the face and lips, is an ancient technique dating back to prehistoric times. The use of such products has grown in recent years, as has the variety of colors, textures, and luster's available. This is evident by the fact that lipsticks are available in hundreds of different colors to meet the demands of women. This study was carried out to formulate herbal lipstick using *Brassica oleracea* var. *capitata f. rubra* (Purple Cabbage) and *Tagetes erecta* (Marigold), acknowledging that lipsticks are among the most widely used cosmetics by women. Due to the numerous detrimental effects of available synthetic preparations, the present study was carried out to develop an herbal lipstick with minimum or no side effects that will be widely utilized by the ladies of our communities with great confidence and satisfaction. Herbal lipsticks were evaluated for prescribed criteria. The results show that all of the herbal lipsticks were stable and had a good force of application, with the breaking threshold reaching 40gm. The melting point values for different formulations range from 51.8 to 61.6, and pH ranged from 5.3-6.7. The study stated that natural colouring pigment may be a preferable option to develop herbal lipsticks.

Keywords: *Brassica oleracea, Tagetes erecta*, Cosmetics, Herbal lipstick.

INTRODUCTION

The Greek verb "adorn" (to add something to make something or someone more lovely or beautiful) is where the term "cosmetic" originates. It may be defined as a substance that comes into touch with the various bodily parts of an individual, including the lips, teeth, skin, hair, nails, and mucous membranes.[1] Cosmetic products aid in enhancing or altering the body's external appearance. Both developing and industrialized nations have high demand for these goods. There is a rising global market for herbal cosmetics, which are a precious gift from the natural world. A variety of herbal products are available to fulfill the beauty regimen.[2] Lipstick is a cosmetic product that is used for the lips to color and protect them from the external habitat.[3] First use of lipsticks dates back to Sumerian times. The fruits, henna, insects, and clay rust were used to produce the natural stains. Mesopotamian females applied jewel powder to their lips to give color.[4] The current trend in beauty care is herbal cosmetics, often referred to as natural cosmetics.[5] Products are used more often these days, and the variety of color tints, textures, and luster has changed and grown. This is evident from the fact that lipstick is offered in many color combinations to meet the needs of women.[6] Because users often nibble away at lipsticks, it is imperative that health inspectors closely examine the components in lipsticks. When ingested by humans, the lipstick's colour-enhancing chemicals are poisonous. Coal tars, which are used to manufacture synthetic colours, have the minor potential to cause rashes, allergies, nausea, and dry lips. In more severe situations, they may result in cancer and possibly death.[7] The goal of the current project was to create and test lipsticks made entirely of natural materials in light of the importance of natural goods. Extracts of marigold petals and purple cabbage leaves were used as natural colours in the investigation. Purple cabbage, blue kraut, and red kraut are other names for the cabbage cultivar known as red cabbage (*Brassica oleracea* var. *capitata f. rubra*). In the Mediterranean area, it is commonly cultivated. Red cabbage is a blooming dicotyledonous herbaceous plant that blooms every two years. Bioactive components of red cabbage include anthocyanins, vitamins A, B, and C, and isothiocyanates. Among the 150 flavonoids examined, anthocyanins, the natural colour found in red cabbage, have the highest antioxidant effectiveness.[8] Marigold is a blooming plant and scented annual herb that grows to 0.4 and 1 meter tall. *Tagetes erecta* (marigold) blooms have a bright shade, a fluorescent fragrance.[9] Marigold flower petals contain a high concentration of carotenoids and polyphenols, with lutein esters accounting for 70-79% of total carotenoids. Researchers are drawing more attention to this attractive plant because of its bioactive components and enormous therapeutic potential, particularly in lowering the risk of macular degeneration. Marigold petals contain significant levels of lutein (oxygenated carotenoid xanthophylls), which is utilized as a coloring additive in food & feed industries and as an antioxidant.[10]

MATERIALS AND METHODS

Collection of plant

Marigold and Purple cabbage were brought from the local market in Vadodara in January 2023 to make the herbal lipstick.

Extraction of Color Pigments

The petals of flower and leaves of purple cabbage were separated and were put for drying in sunlight. The drying procedure was carried out for 1 week. After drying the petals and leaves were first crushed in mortar pastel. Then the crushed petals and leaves were transferred into the grinder and the petals were grinded until they were coarsely powdered. Then 1g of powder was taken and mixed with 2ml of olive oil. Then the mixture was filtered from the cloth to obtain the extract in more pigmented form.

Formulation of herbal lipstick

The reported method was used to prepare herbal lipstick. The components and formulation details are listed in a Table 1. All ingredients were combined in a specific ratio, and six formulations (L1 to L6) were developed.[11]

Table 1: Components in the herbal lipstick formulation at the recommended amounts

Sr. No.	Ingredients	Quantity taken					
		L1	L2	L3	L4	L5	L6
1	Olive oil (ml)	2.7	3	3	3.15	3.15	3.15
2	Hard paraffin (gm)	-	-	-	-	0.3	0.3
3	Bees wax (gm)	0.3	0.3	0.3	0.4	0.4	0.4
4	Carnauba wax (gm)	0.12	0.3	-	0.55	0.55	0.55
5	Strawberry essence	q.s	q.s	q.s	q.s	q.s	q.s
6	Lanolin (gm)	0.7	-	0.7	0.7	0.7	0.7
7	Titanium dioxide (gm)	-	-	-	0.21	0.21	0.21
8	Cetyl alcohol (gm)	-	0.25	0.35	0.35	0.35	0.35
9	Purple cabbage extract (gm)	1	1	1	1	1	1
10	Marigold flower extract (gm)	1.5	1.5	1.5	1.5	1.5	1.5

Table 2: Evaluation of herbal lipstick formulations (L1 to L6)

Sr. No	Evaluation parameters	L1	L2	L3	L4	L5	L6
1	Color	Light Reddish brown	Coppery brown	Coppery brown	Coppery brown	Coppery brown	Coppery brown
2	pH	5.3± 0.2	6.5± 0.2	6.7± 0.3	6.5± 0.2	6.6± 0.2	6.6±0.2
3	Skin irritation test	Slight	No	No	No	No	No
4	Melting point	57˚C	51.8˚C	59˚C	61˚C	59.6˚C	61.6˚C
5	Breaking point	40 gm	40 gm	40 gm	35 gm	35 gm	30 gm
6	Surface anomalies	Yes	Yes	No	No	No	No
7	Perfume stability	+	+	+	++	+++	+++
8	Aging stability	Bleeding	Crystals	Smooth	Smooth	Smooth	Smooth
9	Solubility test	Ethanol	Ethanol	Ethanol	Ethanol	Ethanol	Ethanol

EVALUATION OF HERBAL LIPSTICK

In light of the need to uphold a consistent standard for herbal lipstick, the herbal lipstick formulations underwent testing utilizing various parameters, including pH, skin irritation, melting and breaking points, and solubility tests.[7,11]

1) Color of lipstick: The color of the lipstick was evaluated through physical inspection.

2) pH: The pH of the herbal lipstick formulations was measured using a digital pH meter.

3) Skin irritation test: This was achieved by applying the product to the skin for duration of 10 minutes.

4) Determination of Melting point: Insert the lipstick's two ends into an exposed glass capillary tube. Then, five capillary tubes—which are around 10 mm high and enable tubes to stand for the required period of time and temperature in the capillary tube apparatus—were filled with enough lipstick. The temperature at which the lipsticks started to melt in the capillary tube was then used to calculate the melting point. Five times through the process were the processes repeated; the average was computed and reported.

5) Determination of Breaking point: The strength of lipstick is determined using the breaking point. The lipstick was positioned in a horizontal groove one inch away from the support's edge. The weight was increased by 10 gm progressively over 30 seconds, and the breaking point was found by measuring the weight at which the lipstick broke.

6) Surface anomalies: This was being analyzed to find any surface defects, such as surface crystal development, mould contamination, and fungus etc.

7) Perfume stability: After 30 days, the herbal lipsticks were tested for aroma.

8) Determination of aging stability: The lipstick was kept in a 40˚C hot air oven for one hour, during which time it's bleeding, surface crystallisation, and application ease were assessed. This was done to guarantee the accuracy and consistency of the findings.

9) Solubility Test: To test the lipstick's solubility, it was dissolved in a range of solvents.

Table 2 shows the results of various evaluation parameters of herbal lipstick formulations (L1-L6).

RESULTS AND DISCUSSION

In recent decades, women's usage of cosmetics has increased dramatically. Lipsticks are now available in a variety of colors and are more lustrous. However, the risks posed by these compounds have come to light. Lip products, compared to other cosmetics, are readily exposed to our bodies directly through the diet, resulting in an increased health risk. The majority of lipsticks contain traces of heavy metals. Research has shown that prolonged exposure to low doses of heavy metals can lead to chronic poisoning or cancer, causing irreversible damage to human organs and severely affecting overall health.[12] In present study the herbal lipsticks were developed from natural colorants derived from Purple cabbage powerful anti-viral, antibacterial, and anticancer activity, and Marigold flower heads were utilized for their antipyretic, anti-tumor, cicatrizing effects, and anti-inflammatory properties.[4] The current effort on preparation and evaluation of herbal lipsticks intended to create a lipstick utilizing herbal ingredients in the hopes of reducing the negative effects caused by synthetic lipsticks. So, the purpose of this study was to produce and test a designed lipstick in the hopes of providing natural support while minimizing negative effects. The developed formulation (Table 1) was evaluated (Table 2), and it was found that the L4 performed the best of the six formulations. As a result of the present research, it was established that these prepared herbal lipsticks are a superior option for women with fewer adverse effects.

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