

## Research Article

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## Formulation and Evaluation of Herbal Lipstick using Hibiscus Rosa-Sinensis

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### ABSTRACT

Synthetic dyes were frequently utilized in the formulation of marketable lipsticks. However, the practice of synthetic dye has been associated with many health problems. Hence, natural colorant might tender a promising solution to this problem. The Anthocynin which are found in Hibiscus have drawn attention as a potential source of natural colorant to synthetic dye. However, the use of natural colorant in available is limited due to its low stability towards temperature, oxygen, pH, phyto and colour deterioration across storage. The purpose of this study was to formulate lipsticks with Anthocynin and evaluate its feasibility as natural colorant in lipstick formulation and study its stability across one-month storage period. In this research, Anthocynin was extracted from fresh Hibiscus flowers using water by compression. The extracted anthocynin pigment was used to prepare lipsticks with basic lipstick formula and the prepared lipsticks were store under light or dark condition for one-month storage period for stability study. The physico-chemical properties of the formulated lipstick like breaking point, surface anomalies, spreadability, skin irritation test, melting point, and perfume stability, homogeneity and colour uniformity were studied and compared with marketable lipsticks. The stability of the formulated lipstick establishes to be stable under dark condition while color loss was greater for lipstick in light condition. Although, lipstick achieved closer standard to commercial lipstick. However, due to the low pigmentation from method, Anthocynin is suggested incorporate in to lip balm application. This research study has proven that Anthocynin could be best replacement for synthetic dye in cosmetics industry for lip balm application.

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### Introduction

Herbal cosmetics are the products which are prepared using plant products, those can be able to produce cosmetic and few therapeutic actions [1, 2]. In cosmetics both natural such as oils, extracts, secretions and phyto ingredients include pure constituents from variety of botanical Sciences are used. These products influence the functions of skin and provide nutrients necessary for healthy skin or hair. Herbal lipsticks are the cosmetic products which are most widely used in the makeup to enhance the appearance or beautification of lips [3]. Hibiscus is the broad variety of genus which had more than 679 species [4, 5]. These hibiscus flowers are used to treat cancer, fall bladder attacks, to lower BP, to relieve dry coughs and topically to treat skin afflictions. There are group of pigments create the vibrant color displays of hibiscus flowers. Anthocyanin pigments produce various colors depending upon the individual pigment molecule and the PH it is exposed to. Red colored anthocyanins are water soluble pigments present in plant sap. These anthocyanins are rich in antioxidants which are helped to boost the immune system.

### Material and Methods

#### Selection of Herbs

The hibiscus flowers used in the formulation of herbal lipsticks were selected based upon its anthocyanins and mucilage content.

#### Collection of Plant Material

Herbs samples were purchased from local Ayurvedic store in Gudiwada, storage conditions were properly maintained with respect to light and temperature. The herbs were recognized and compared with authentic specimen by taxonomist available at the Krishna University Herbarium (KUHL). The petals of the flowers were used in the formulation of herbal lipstick. The collected flowers were shade dried at normal environmental condition, powdered, stored in a closed container for further use.

#### Extraction of Color Pigment

The shade dried coarsely powdered flower petals of hibiscus were extracted with ethanol (60°C) by using centrifugation process. After completion of extraction, the extract was filtered while hot to remove impurities if present. Reddish colored extract was obtained. The extract was stored in air tight container.

#### Methodology

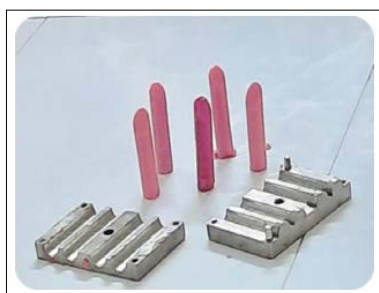
The herbal lipstick using hibiscus flower was formulated as per the following formula:

**Table 1: Lipstick Optimized Formula**

Ingredients	Composition per lipstick	Importance
Bees Wax	4.5 gm	Provide hardness and glossy
Shreeji Wax	3 gm	Used as emollient
Castor Oil	6 ml	Aid in blending
Olive Oil	1 ml	Used as moisturizer
Fragrance	Few drops	Used to provide fragrance
Lemon Juice	Few drops	Used as anti-oxidant
Anthocyanin (Hibiscus)	6 ml	Used as natural colorant

The anthocyanin extracts were mixed with lemon juice in a small beaker (beaker A) and stir continuously to ensure the pigment well dispersed in the mixture. All waxes, olive oil and castor oil were measured in another small beaker (beaker B) and heated in water bath at 80°C with gentle stirring until beeswax melts completely. Remove the beaker B from the water bath and allow attaining 50°C. Both mixtures were then mixed together with spatula until uniform colour was achieved. A few drops of fragrance oil were added to the mixture and the mixture was stirred again to ensure evenly blending of all ingredients.

A little amount of oil was applied on the surface of the lipstick mould to ease the process of removing lipstick from the mould. After blending fragrance oil into the lipstick formula, the mixture was poured into lipstick mould. The mould was chilled immediately in the fridge for 15 minutes to solidify the lipstick mixture. When demoulding, the empty lipstick stick was insert into the lipstick and the lipstick were lift upwards carefully. At this point, the lipstick was done and shown in Figure 1.



**Figure 1: Formulated Lipsticks of Hibiscus**

## Evaluation of herbal lipsticks

Evaluation of herbal lipsticks was carried out by using Following Methods

### Melting Point

The formulated herbal lipstick was taken in a beaker and is placed on heating mantle at the temperature starting from 30oC. Melting point of the lipstick was observed by increasing the temperature slowly until the lipstick starts melting by using thermometer. The temperature at which the lipstick starts melting is considered as the melting point of formulated herbal lipstick.

### Spreadability

The spreadability test for formulated herbal lipstick was conducted in order to determine the smoothness and uniformity. This test was performed by applying lipstick on filter paper with desired measurements.

### Breaking Point

Breaking point of formulated herbal lipstick was conducted in order to determine the strength and hardness of lipstick. This test was performed by applying pressure using loads with variable weights. The weight at which the lipstick breaks is considered as the breaking point of lipstick.

### Surface Anomalies

Surface anomalies were evaluated to observe imperfection on the surface of formulated lipstick by visual observation.

### Skin Irritation Test

Skin irritation test of formulated herbal lipstick was performed by applying it on the skin surface topically for 10min on different skin types.

### Results

It is very essential to confirm the consistency standard of the produced lipsticks. Hence, the lipsticks formulated were tested for its spreadability, melting point, breaking point, surface anomalies and skin irritation test and the result were presented in Table 2.

**Table 2: Evaluation of Formulated Anthocyanin Lipsticks at room temperature**

Evaluation Parameters	Standard Commercial Lipstick	Anthocyanin Lipsticks											
		F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12
Spreadability	E	I	I	E	U	E	U	I	U	E	E	U	I
Melting Point (°C)	Above 50°C	30	20	42	38	48	37	52	50	51	48	51	50
Breaking point (g)	95	60	45	50	55	90	48	100	98	110	110	111	110
Surface Anomalies	No	No	No	No	Yes	No	Yes	No	Yes	No	No	Yes	No
Skin irritation	No	No	No	No	No	No	No	No	No	No	No	No	No

The spreadability test for F3, F5, F9 and F10 lipsticks were excellent as no fragment upon spreading with no deformation of lipstick was observed. The melting point of lipsticks indicates the safe limit of storage. The standard melting point of a commercial lipstick is above 50 °C in order to remain its rigid structure and do not melt in room temperature. Since the melting point of lipsticks - F7, F8, F9, F11 and F12 determined are more than 50°C, the synthesized lipsticks – F7, F8, F9, F10, F11 and F12 were considered achieved the requirement for safe limit storage. The breaking points of the formulated lipsticks were between 105 g to 110 g which were faintly higher than the breaking point of a marketable lipstick of 95 g. The best softening and rupture point in a lipstick is attained by holding a good harmonizing between all ingredients in lipstick formulation. The most tiresome part of formulating lipstick is ruling appropriate ratio of wax in relation to oil in the lipstick formula. As wax in proportion to oil increase, the melting point and the hardness of the lipstick get increased but that causes sticks breakage. The results of melting point and breaking point of the formulated lipstick - F9 show that the formulation of lipstick was with suitable wax to oil ratio. For surface anomalies test, no fungi and crystallization were detected in the surface of lipstick. Lastly, the formulated lipsticks were applied on back arms and behind the ear for about 5 minutes for test skin irritation as the skin area at those locations are the most appropriate location to test for skin irritation. The results showing no skin irritation was observed as all ingredients used in the formulation are natural ingredients. Besides the evaluation mentioned above, the lipsticks were evaluated on color uniformity by visual inspection. The color of the synthesized lipsticks – F7, F9 and F11 are uniform and stable under room temperature. Lastly, the odors of all lipsticks are pleasant throughout the storage period.

## Discussion

The results of all the lipstick formulations indicated that when compared with formulations of paraffin wax, the formulations with shreeji wax give best results. The formulated lipstick F9 shows positive results on spreadability, melting point, breaking point, surface anomalies, and skin irritation test. Lipstick-F9 showed remarkable stability even in accelerate environment (light condition). This indicates that the lipstick formula F9 was close to the standard of commercial lipsticks.

## Conclusion

The main aim of this research was to formulate and evaluate herbal lipstick using herbal ingredients with the anticipation of minimal side effects and desired properties. It was concluded that Anthocyanin can be used as natural coloring agent in lipsticks. Due to the low pigmentation of anthocyanin lipstick, the anthocyanin is suggested to incorporate into lip balm formula instead of lipstick formula. Overall, the results show that anthocyanin is potential to be used as alternative to synthetic dye in cosmetic industry [6-14].

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