



## Formulation and Evaluation of Herbal Lipstick Using *Beta Vulgaris* and *Punica Granatum* Extract

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### Abstract

The lipstick gives an attractive color, shiny appearance to the lips, accentuating the positive point and distinguishing the defects. It also prevents the formation of cracks on the lips which lead to bacterial infections. It also provides an emollient action on the lips. The lipstick is mainly composed of an oil wax base, rigid enough to form a stick with a dye dissolved or dispersed in the oil and the pigment correctly suspended there and flavoured, modelled and enclosed in a box. The herbal word is a safety symbol in contrast to a synthetic one that has negative impact on human health. Herbal preparations such as herbal tonic, herbal tablets, herbal creams, herbal paste, herbal lipstick & herbal shampoos, etc., have become more famous among consumer medicinal herbs which represent the segment in faster growth to treat various ailments.

Due to the various adverse effects of the synthetic preparations available, the present study was conducted for the formulation of herbal lipstick. The objective of this work is to formulate and evaluate herbal lipstick from beet root and pomegranate as natural coloring pigments and to minimize the side effects of synthetic formulations. The goal of this work is to extract the colored pigments from the main root *Beta Vulgaris* and *Punica Granatum*, optimize the formula to prepare the lipstick and evaluate the prepared formulations.

**Keywords:** *Beta Vulgaris*, *Punica Granatum*, Herbal Lipsticks, pigments.

### Introduction

Lipstick is a cosmetic product that contains pigments, oils, waxes and emollients that apply color, texture and protection to the lips. [1] Synthetic lipstick contains heavy metals such as nickel, copper, chromium, arsenic and cobalt and some of these toxic substances are absorbed by the lips and stomach during the application of these lipsticks. The rest is absorbed by the pigment of the skin, where it reacts with other chemicals in the environment and causes rashes on the lips. [2]

The herbal word is a safety symbol in contrast to the synthetic which has negative effects on human health. Herbal preparations such as herbal compresses, herbal tonics, herbal pastes, herbal

shampoos, herbal sindur, herbal contraceptives and herbal lipstick are becoming popular now days. Perhaps, the herbal user wants to take control of the health care needs. Perhaps the great personal health system is unpleasant for many and they turn to herbal medicine because of the greater side effects of the synthetic preparations available. [3] Evidences are there that use of highly advanced self-beautifying ideas and a wide range of various cosmetics used by women and men in ancient India. Many of these practices were subtly intertwined with the season (Sanskrit: Rutus) and the normal rituals of life.

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The use of cosmetics (herbal) has increased too many folds in the personal care system & there is a strong demand for herbal cosmetics. This happened because of the vast use of synthetic products. Herbal cosmetics are increasingly in demand on the world market & are precious gift of nature. There is a huge range of herbal cosmetics product suitable for the beauty regimen and adding herbs to the cosmetic is safe for the skin.

The herbal word is a safety symbol in contrast to a synthetic one that has negative effects on the human health. Herbal preparations have become among consumers as they represent the fastest growing segment for curing various ailments. Many in the personal health system turn to herbal medicine because of the greater side effects of the synthetic preparation available. [4-5]

Beetroot (*Beta vulgaris*) is a plant in the Chenopodiaceae family that is now included in the Amaranthaceae family. It is best known for its many cultivated varieties, the best known of which is the root vegetable known as beets or garden beets. Beet (*Beta vulgaris*) is the main source of natural red dye, known as "beet red". Beet roots and leaves have been used in traditional medicine to treat a wide variety of ailments. The ancient Romans used beets as a treatment for fever and constipation, among other ailments. The color of red / purple beets is due to a variety of betalain pigments and is used industrially as a red food colouring and can be used as a colouring agent in lipsticks. [6-7]

The pomegranate (*Punica granatum*) is a fruit-bearing deciduous shrub in the family Lythraceae, subfamily Punicoideae. The red colour of the juice is endorsed to anthocyanins, such as delphinidin, cyanidin, and pelargonidin glycosides. Generally, a raise in juice pigmentation occurs during fruit ripening. [8-9]

The demand for herbal cosmetics is increasing considerably as they are skin friendly and have no side effects. Normally, herbal cosmetics are also called natural cosmetics. Herbal cosmetics are formulated by first preparing a natural base in which one or more natural ingredients are incorporated correctly. [10]

### Material and Methods

#### Preparation of Beetroot Colour Pigment

Extraction of pigment was done by homogenization of equal ratio of pulp and solvents (1/1 w/v). Typically 100 g of peeled beetroot, of watery consistency, was shacked and macerated with 100 ml solvents (EtOH, aqueous ethanol 50:50) for 15 mins using ice cooling condition. Aqueous mixture was then centrifuged at 18,000 rpm and 4°C for 20 mins followed by filtration on nylon mesh. Ethanol was completely removed after concentration process and samples were kept in a dark vessel. [11]

#### Preparation of Pomegranate Colour Pigment

Colouring agent was collected from seeds of pomegranate by pressing, filtration and evaporation of the resultant juice. [12]

**Table 1: Formulation Table of Lipstick**

| S. No | Ingredients                   | Use                 | F1       | F2      | F3     | F4     | F5    | F6      |
|-------|-------------------------------|---------------------|----------|---------|--------|--------|-------|---------|
|       |                               |                     | Quantity |         |        |        |       |         |
| 1     | Castor oil                    | Blending agent      | 10 ml    | 7 ml    | 4 ml   | 8 ml   | 12 ml | 5 ml    |
| 2     | Paraffin wax                  | Glossy and hardness | 11 gm    | 10 gm   | 5 gm   | 18 gm  | 8 gm  | 12 gm   |
| 3     | Bees wax                      | Glossy and hardness | 12 gm    | 9 gm    | 11 gm  | 23 gm  | 9 gm  | 18 gm   |
| 4     | Beet root Juice               | Colouring agent     | 8 ml     | 12ml    | 17 ml  | 15 ml  | 24 ml | 13 ml   |
| 5     | <i>Punica granatum</i> Juice  | Colouring agent     | 3 ml     | 5 ml    | 4ml    | 7ml    | 9ml   | 8ml     |
| 6     | Ripe fruit powder of Shikakai | Surfactant          | 6 gm     | 7.75 gm | 3 gm   | 2 gm   | 2 gm  | 2 gm    |
| 7     | Lemon juice                   | Antioxidant         | 0.5 ml   | 0.5 ml  | 1 ml   | 1.5 ml | 2 ml  | 0.75 ml |
| 8     | Orange, essence               | Flavouring agent    | 0.5 ml   | 0.75 ml | 0.5 ml | 0.5 ml | 1ml   | 0.5 ml  |
| 9     | Vanilla essence               | Preservative        | q. s     | q. s    | q. s   | q. s   | q. s  | q. s    |

q.s. = quantity sufficient

### Method of Preparation

Required quantities of Shikakai powder, fruit extract were weighed separately along with castor oil and triturated. Weigh the required quantities of amount of bees wax and paraffin wax heat it on a china dish till it becomes a hot liquid on water bath with decreasing order of their melting point. Now add the second preparation to the first preparation slowly, both phases were mixed at same temperature.

To this add required quantity of lemon juice and heat properly. Add orange essence and vanilla essence then pass this preparation through the lipstick moulds and cool them by keeping in ice for about 30 mins. Remove and store the obtained lipstick in refrigerator. Lipsticks were removed from mould and flamed. Prepared Lipsticks were fitted in Lipstick container and used for further evaluation.<sup>[12]</sup>

### Evaluation of Herbal Lipsticks<sup>[1-2]</sup>

The prepared herbal lipstick were evaluated with the following parameters

#### 1. Organoleptic properties

The prepared herbal lipsticks were evaluated for organoleptic properties such as colour odour and texture.

#### 2. Melting point

This test is done to know about the limit of safe storage. Determination of melting point was done by taking a melted lipstick sample and filled it into a glass capillary tube. The capillary tube is then subjected to cooling in ice for about 2 hrs and is then tied to a thermometer. This assembly was then dipped into a beaker containing water which was subjected to continuous stirring. A temperature at which the material starts moving along the capillary tube is considered as melting point.

#### 3. Determination of pH

The pH of the formulated lipstick was analyzed by using PH meter.

#### 4. Breaking point

This test is performed to determine the strength of the lipstick. The lipstick is placed in a horizontal position in a socket away from the edge of the support. The lipstick was then subjected to number of weights hanging from the support. This weight was gradually increased at time interval of 15secs and the weights at which the lipstick breaks is considered as the breaking point.

#### 5. Force of application

This test is performed to get at a comparative measurement of the force to be applied in this test, a piece of coarse brown paper is kept on a shadow graph balance and the lipstick is applied at 45° angle to cover 1 sq. inch area till it is fully covered. The pressure reading gives an indication of force of application.

#### 6. Skin irritation

The herbal lipsticks of all the formulations (F1-F6) were evaluated for skin irritation test by applying the product on the skin for about 15mins.

#### 7. Perfume stability

These studies were conducted on all the six (F1-F6) formulations of herbal lipstick to record the fragrance.

#### 8. Thixotrophy character

This test is performed to check the depth of penetration by using penetrometer. Here, a standard needle of specifies diameter is allowed to penetrate into the lipstick for 5secs under certain load. The depth of the penetration of the needle is a measure of thixotropic character of the herbal lipstick.

#### 9. Softening point (Ring and ball method)

It is the temperature at which the mass of the lipstick and the steel ball gets loosened and feel into the bottom of the breaker. An aluminium ring was taken and the lipstick sample was fitted into it. The extra mass of the lipstick was removed by using a sharp blade to get an intact amount of the lipstick into the ring. This was then placed in the refrigerator for 10mins at the temperature of 10°C. Thereafter, lipstick was tied to a stand and steel ball was placed on the above assembly. Assembly was then dipped into a beaker containing water which was subjected to heating with continuous stirring & temperature recorded by using thermometer.

#### 10. Surface abnormalities

These studies were conducted on all the six (F1-F6) formulations of herbal lipstick to detect the presence of crystals on the surfaces of the prepared herbal lipsticks.

### Results and Discussion

The prepared formulation was evaluated and it was found that the, F4 was best among the six formulations. Hence, from present investigation it was concluded that this formulated herbal

lipsticks has better option to women with minimal side effects.

**Table 2: Results of Evaluation Parameters**

| Evaluation parameters        | Formulations Code |                            |                      |                |                |                |
|------------------------------|-------------------|----------------------------|----------------------|----------------|----------------|----------------|
|                              | F1                | F2                         | F3                   | F4             | F5             | F6             |
| <b>Colour</b>                | Light yellowish   | Light yellowish red colour | Light Reddish colour | Reddish colour | Reddish colour | Reddish colour |
| <b>Odour</b>                 | Aromatic          | Aromatic                   | Aromatic             | Aromatic       | Aromatic       | Aromatic       |
| <b>Texture</b>               | Smooth            | Smooth                     | Smooth               | Smooth         | Smooth         | Smooth         |
| <b>Melting point</b>         | 54 – 55 °C        | 53 – 54 °C                 | 61 – 62 °C           | 62 – 63 °C     | 59 – 60 °C     | 63 – 64 °C     |
| <b>Determination of pH</b>   | 6.4 ± 0.3         | 6.9 ± 0.2                  | 6.7 ± 0.1            | 6.5 ± 0.3      | 6.8 ± 0.2      | 6.3 ± 0.2      |
| <b>Breaking point</b>        | 23                | 24                         | 28                   | 31             | 24             | 26             |
| <b>Force of application</b>  | Poor              | Easy                       | Good                 | Good           | Easy           | Good           |
| <b>Skin irritation</b>       | No irritation     | No irritation              | No irritation        | No irritation  | No irritation  | No irritation  |
| <b>Perfume stability</b>     | +++               | ++                         | +                    | +++            | +++            | ++             |
| <b>Thixotropy character</b>  | 8.5               | 8.2                        | 8.9                  | 9.1            | 7.9            | 8.6            |
| <b>Softening point</b>       | 55 - 56 °C        | 58 °C                      | 56 - 57 °C           | 54 – 56 °C     | 57 °C          | 53 - 55 °C     |
| <b>Surface abnormalities</b> | No defect         | No defect                  | No defect            | No defect      | No defect      | No defect      |

+ Good, ++ Very Good, +++ Excellent

The present study formulation and evaluation of lipstick containing herbal ingredients was aimed to manufacture a lipstick containing herbal ingredients to minimize the side effects over the synthetic ones. The formulation table containing all formulations (F1–F6) was prepared and evaluation studies were performed on the prepared lipstick containing herbal ingredients. All the six formulations (F1–F6) showed promising and challenging results. The organoleptic studies displayed the colour of the lipstick along with the odour. The results can be seen in the table 2.

The composition of herbal lipstick consisting of Ripe Shikakai powder, Castor oil, Paraffin wax, Bees wax, Beetroot juice, Pomegranate juice, Orange essence, Lemon juice, Vanilla essence, offers a suitable practical approach to achieve a better formulation as lipstick containing herbal ingredients.

### Conclusion

In the present work, containing herbal ingredients was prepared successfully according to the given formulations.

The following are the conclusions drawn:

- Lipstick containing herbal ingredients was successfully formulated by using six different formulations (F1 – F6)
- Among all the six formulations, F4 formulations exhibited good results.
- F4 formulation lipstick containing herbal ingredients was found to be in compliance with all the evaluations tests.

Likewise even all the other formulations also exhibited satisfactory results, but when compared with all the formulations F4 formulation exhibited good results regarding all the aspects.

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