



Design, Development and Assessment of Herbal Lipstick from Natural Pigments

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ABSTRACT

The natural pigment or colorant in the cosmetics, are inconceivable in demand since, historical time till day. The colors that add to the shade of the lipstick, are unsafe to people on utilization can bring about sensitivity, sickness, dermatitis, and drying of the lips. The usage of natural dyes and pigments, increase more importance in food and textile industries because of their non toxic and eco friendly characteristics. Coloring pigments is obtained from petals of *Rosa rubiginosa*, flower of *Bougainvillea spectabilis*. *Beta vulgaris* (Beetroot) and flower of *Crocus sativus*.(F1 to F4) and were evaluated on the parameters such as melting point, breaking point, force of application, surface anomalies, aging stability, solubility, pH, skin irritation and perfume stability etc... The results are shown in tab.4 and prepared lipstick in fig.2 F1 to F4. The prepared lipstick formulations F1, F2 and F4 showed ideal properties like shining, spreading and smoothness of lips after application. Further studies through a detailed clinical trial may be suggested to ensure safety of these formulations. Hence from present investigation it was concluded that, formulated herbal lipstick having minimal and no side effects and thus showing maximum local effect on lips.

Keywords: Herbal cosmetics, lipstick, natural pigments, formulation evaluation

INTRODUCTION

With the beginning of the civilization, Herbal cosmetic also known as “natural cosmetics”, peoples (men and women) had the magnetic dip towards impressing others with their looks was reported¹and there area number of wide range of herbal cosmetics products to satisfy your beauty regime, is very safe for the skin. The human beings have been using herbs for different purpose like food, medicine, beatifying with the advancement of science & technology was studied².

The phenomenon of herbals, nowadays becoming a full fledged, encircling both health and beauty care. The lips perhaps constitute the most sensitive part of our body and it is also very close to the nose and mouth. The natural aroma and colours compounds used in the lipstick, by transdermal absorption of the skin, lips and also inhaling the vapors of selected combinations of aroma principles could release neurochemicals in the brain through the receptors in the mouth (lips) and nose takes the desired effects.

In the cosmaceutical application, the lipstick functional is safe, eco-friendly, health protective and herbal colours, aroma useful as natural colors are now being well researched and also considered as powerful agents for promoting the physical health was studied³ and in similar study Cosmetics include skin care creams, lotions, powders, perfumes, lipsticks, fingernail and toe nail polish, eye and facial make up, colored contact lenses, hair colours, hair sprays, gels, deodorants, baby products, bubble bath, bath salts and many more products are in

great demand in both developing and developed countries⁴, the demand of herbal medicines is increasing rapidly due to their lack of side effects was reported⁵.

In another study, Natural pigment or color in biological system is one, that is synthesized and accumulated in, or extracted from living cells and natural dyes may be defined as chemicals which are obtained from vegetable and animal sources without chemical processing. The applied colour should be fast to sunlight, water washing and to action of mild acid and alkali. The different natural colorants are obtained from following categories is shown in the table 1⁶⁻⁹.

The taking into consideration the importance of natural products, the present work was aimed at formulating and evaluating lipsticks containing only natural ingredients. The ingredients included in the study, extracts of the petals of *Rosa rubiginosa*, flowers of *Bougainvillea spectabilis* extract, juice of the *Beta vulgaris* (Beetroot) and extract of the flower of *Crocus sativus*.

Table 1: List of natural colorants

Origin	
Vegetable origin	<ul style="list-style-type: none"> From root, bark, wood, leaf, flower and seed of plant Indigo, kachanar, catechu, tesu, lalkhair, patang, ratanjot, turmeric, henna, cherry, saffron, kamala, etc There are about 300 plants which yields colours
Animal Origin	<ul style="list-style-type: none"> By dye yielding insect Lac, cochineal, kermes, etc
Mineral Origin	<ul style="list-style-type: none"> Various inorganic metallic salts and metal oxides



The taxonomical classification of A) *Rosa rubiginosa* B) *Bougainvillea spectabilis* C) *Beta vulgaris* D) *Crocus sativus* are shown in fig 1.

TAXONOMICAL CLASSIFICATION

Red rose

Plants description

It is a dense deciduous shrub 2–3 m high and across, with the stems bearing numerous hooked prickles. The foliage has a strong apple-like fragrance. The leaves are pinnate, 5–9 cm long, with 5–9 rounded to oval leaflets with a serrated margin. Shown in fig.1 and taxonomical classification in table 2. Was reported¹⁰ and similarly in

another study, the flowers and hips are aperients, astringent and stomachic. Dried petal infusion is used as heart and nerve tonic, blood purifier. A decoction of the petals is used to treat the mouth sores¹¹.

Rose petals were included in the British pharmacopoeia as an astringent until the 1930s. They make an excellent fragrant jam, most notably from the Damask rose, popular in Bulgaria. Rose hips have a high Vitamin C, mild laxative and diuretic, help treat urinary infection and oil extracted from rose hips is of value in reducing scar tissue and stretch marks caused by pregnancy and birthing, due to its tissue regeneration properties was showed¹².

Table 2: Taxonomical classification (A) *Rosa rubiginosa* (B) *Bougainvillea spectabilis* (C) *Beta vulgaris* (D) *Crocus sativus*

Categories	Kingdom	Division	Class	Botanical Name	Family
A.Red rose	Plantae	Magnoliophyta	Magnoliopsida	<i>Rosa rubiginosa</i>	Rosaceae
B.Paper flower	Plantae	Tracheophyta	Magnoliopsida	<i>Bougainvillea spectabilis</i>	Nyctaginaceae
C.Beetroot	Plantae	Tracheophyta	Magnoliopsida	<i>Beta vulgaris</i>	Amaranthaceae
D.Saffron	Plantae	Spermatophyta	Monocotyledonae	<i>Crocus sativus</i>	Iridaceae

Paper flower

Plants description

Bougainvillea spectabilis grows as a woody vine or shrub, reaching 15 to 40 feet (4.6 to 12.2 m) with heart-shaped leaves and thorny, pubescent stems. The flowers are generally small, white, and inconspicuous, highlighted by several brightly colored modified leaves called bracts. The bracts can vary in color, ranging from white, red, mauve, purple-red, or orange. Its fruit is a small, inconspicuous, dry, elongated achene shown in fig.1¹³ and taxonomical classification in table 2, paper flower is reported to have medicinal values including anti-inflammatory¹⁴ and also in similar study antihyperlipidemic¹⁵, antidiabetic^{16,17}, antifertility^{18,19}, antioxidant^{20,21} and antiulcer properties²².

Saffron

Plants description

It is finely fibrous, usually reticulate; flowers autumnal; leaves rather numerous, usually 5–30, appearing with the flowers or shortly after; bracts flaccid, usually not closely sheathing the perianth-tube, membranous, white or transparent with no marking; anther yellow; style branches 3, usually red is shown in fig.1³¹. Was showed and taxonomical classification in table 2. *Crocus sativus* reported to have antitumor³², anti-inflammatory³³ antioxidant³⁴, antidepressant activity³⁵ and also hyperlipidamic³⁶.

The different Taxonomical classification of (A) *Rosa rubiginosa* (B) *Bougainvillea spectabilis* (C) *Beta vulgaris* (D) *Crocus sativus* are shown in table 2.

Beetroot (Garden beets)

Plants description

Annual or biennial herb; leaves glabrous, ovate to cordate, dark green or reddish, frequently forming a rosette from the underground stem; roots conspicuously swollen at junction with stem; flowering stalk 1.2–1.8 m tall, produced the second year from the top of the tuber; flowers small, numerous in a tall open panicle; fruit an aggregate of 2 or more fruits forming an irregular dry body; in garden beets, roots are usually a deep red color and may be globular or cylindrical shown in fig 1 was showed^{23,24} and taxonomical classification in table 2. In another study, Garden beets are reported to have powerful detoxification²⁵, Kidney ailment²⁶ and increases sex drive²⁷ and in another study beetroot have lowers cholesterol, blood pressure and also in skin disorder was reported²⁸ and also have decomposition of anticarcinogen factors²⁹, antioxidant³⁰.

MATERIALS AND METHODS

Collection of plant material

The herbs used in formulation of herbal lipstick were collected in the months of December 2016, Red rose and Paper flower from the Neelkant garden, Warananagar (MS). Beetroot and Saffron were procured from local market of warananagar.

Extraction of colour pigments

The shade dried coarsely powdered flower petals of *Rosa rubiginosa* and the flower of *Bougainvillea spectabilis* (100 Gms) were macerated for 7 days separately. After completion of extraction, the extract was filtered through Whatman filter paper (No.10) to remove any impurities if present. The extract was concentrated by vacuum distillation to reduce the volume and evaporated on a water bath. Dark reddish coloured extract was obtained.



The concentrated extract was then kept in desiccators to remove the excessive moisture. The dried extract was packed in airtight glass container for further studies. Coloring agent can be obtained from *Beta vulgaris* and *Crocus sativus* by milling followed by pressing indivisibly, filtration and evaporation of the resulted juice, in airtight glass container for further studied.

Formulation of herbal lipstick



Figure 1: A) *Rosa rubiginosa* B) *Bougainvillea spectabilis* C) *Beta vulgaris* D) *Crocus Sativus*

The herbal lipstick was formulated as per method described was reported³⁷. The ingredients used along with their formulation aspects had been mentioned in table 3. All the ingredients are taken in definite ratio and 4 formulations (F1 to F4) were prepared. The different formulated lipstick is shown in fig 2.



Figure 2: Prepared different herbal lipstick (F1) Red rose (F2) Paper flower (F3) Beetroot (F4) Saffron

The Prepared different herbal lipstick (F1) Red rose (F2) Paper flower (F3) Beetroot (F4) Saffron is shown in fig 2.

Table 3: Ingredients with their prescribed quantity in the formulation of herbal lipstick

Sr. No	Ingredients	Importance	Quantity taken			
			F1	F2	F3	F4
			Red rose	Paper flower	Beet root	Saffron
1	Castor oil	Blending agent	4 gm	4 gm	4 gm	4 gm
2	Paraffin wax	Glossy and hardness	5.6 gm	5.6 gm	5.6 gm	5.6 gm
3	Bees wax	Glossy and hardness	7.2 gm	7.2 gm	7.2 gm	7.2 gm
4	Rose petal extract	Coloring agent	2.5 gm	-	-	-
5	Paper flower extract	Coloring agent	-	2.5 gm	-	-
6	Beet root extract	Coloring agent	-	-	1.5 gm	-
7	Saffron	Coloring agent	-	-	-	1.5gm
8	Shikakai powder	Surfactant	0.4 gm	0.4 gm	0.4 gm	0.4 gm
9	Lemon oil	Antioxidan	0.8 ml	0.8 ml	0.8 ml	0.8 ml
10	Vanilla essence	Preservative	q.s.	q.s.	q.s.	q.s.
11	Orange essence	Flavoring agent	1ml	1ml	1 ml	1 ml
12	Mica powder	Texture	-	-	qs	-

Note: q.s- quantity sufficient

The various Ingredients with their prescribed quantity in the formulation of herbal lipstick are shown in table 3.

Evaluation of herbal lipstick

It is very essential to maintain a uniform standard for herbal lipstick, keeping this view in mind the formulated herbal lipsticks was evaluated on the parameters such as melting point, breaking point, thixotropy character, force of application and surface anomalies etc.

Melting point

Determination of melting point is important as it is an indication of the limit of safe storage. The melting point of formulating lipstick was determined by capillary tube method the capillary was filled, keep in the capillary apparatus and firstly observed the product was slowly slowly melted. After sometimes was observed the product was completely melted. The above procedure was done

in 3 times and the melting point ratio was observed in different-different formulation.

Breaking point

Breaking point is done to determine the strength of lipstick. The lipstick is held horizontally in a socket ½ inch away from the edge of support. The weight gradually increased by a specific value (10 GM) at specific interval of 30 second and weight at which breaks are considered as the breaking point.

Thixotropy character

It is indication of thixotropic quality and is done by using penetrometer. A standard needle of specific diameter is allowed to penetrate for 5 second under a 50 gm load at 25°C. The depth of penetration is a measurement of the thixotropic structure of lipstick.

Force of application

It is tested for comparative measurement of the force to be applied for application. A piece of coarse brown paper can be kept on a shadow graph balance and lipstick can be applied at 45° angle to cover a 1 sq. inch area until fully covered. The pressure reading is an indication of force of application.

Surface anomalies

This is studied by the surface defects, such as no formation crystals on surfaces, no contamination by molds, fungi etc.

Aging stability

The product was stored in 40° C at 1 hrs. Various parameters such as bleeding, crystallization of on the surface and ease of application were observed.

pH parameter

The pH of formulated herbal lipstick was determined using pH meter.

Solubility test

The formulation herbal lipstick was dissolved in various solvents like acetone, hexane, petroleum ether, water, alcohol etc. & the solubility was observed.

Skin irritation test

It is carried out by applying product on the skin for 10 min.

Perfume stability

The formulation herbal lipstick was tested after 30 days, to record the fragrance.

The various evaluations of formulated herbal lipsticks (F1 to F4) are shown in table 4.

Table 4: Evaluation of formulated herbal lipsticks (F1 to F4)

Sr. No	Evaluation parameters	Inference			
		F1	F2	F3	F4
		Red rose	Paper flower	Beet root	Saffron
1	Colour	Orange brownish	Redish orange	Redish brownish	Yellowish orange
2	pH	6.8±0.1	6.5±0.3	6.5±0.1	6.5±0.3
3	Skin irritation test	No	No	No	No
4	Melting point	50-58	60-61	60-61	55-60
5	Breaking point	30	31	27	30
6	Thixotropy character	8	9	9	9
7	Force of application	Good	Good	Good	Good
8	Surface anomalies	No defect	No defect	No defect	No defect
9	Perfume stability	+++	+++	+	++
10	Aging stability	Smooth	Smooth	Smooth	Smooth
11	Solubility test	Ethanol	Water	Ethanol	Water

RESULTS AND DISCUSSION

The natural ingredients were used for formulating natural herbal lipsticks, contains coloring agent, which is obtained from the petals of *Rosa rubiginosa*, flower of *Bougainvillea spectabilis*, *Beta vulgaris* (Beetroot) and flower of *Crocus sativus*. The different formulation, evaluation parameters like color, pH, melting point,

breaking point, thixotropy, surface anomalies, perfume and aging stability... etc, the results are shown in the tab.4 and prepared lipstick in fig.2 F1 to F4.

It was observed that, among all the prepared formulations (F1 to F4). The formulations F2 and F4 were good enough to meet the general characteristics for ideal lipsticks, on the other hand formulations F1 and F3



showed poor pigmentation after application. The reason for such observation may be due to use of polar solvents during extraction of the coloring matter from the plant sources.

The Formulation F3 contained mica powder along with a beet root extract was also smooth enough and complied with the requirements of lipsticks.

Due to various adverse effects of available synthetic preparation, hence from present investigation, it was concluded that this formulated herbal lipstick, having minimal and no side effects and thus showing maximum local effect on the lips.

CONCLUSION

The current study offers, new archetype of lipstick formulations containing natural ingredients and also serves as a guideline to use natural products in lipstick formulations, so as to avoid toxic effects of harmful chemicals or else used in synthetic lipsticks. The prepared lipstick formulations F1, F2 and F4 showed ideal properties like shining, spreading and smoothness of lips after application. Further studies through a detailed clinical trial may be suggested to ensure safety of these formulations.

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