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 reported and 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, beautifying with the advancement of science & technology was studied.

The phenomenon of herbas, 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 cosmeaceutical 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 studied 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 countries, the demand of herbal medicines is increasing rapidly due to their lack of side effects was reported.

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.

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

<table>
<thead>
<tr>
<th>Origin</th>
<th>From root, bark, wood, leaf and seed of plant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetable origin</td>
<td>Indigo, kachanar, catechu, tesu, lalkhair, patang, ratanjot, turmeric, henna, cherry, saffron, kamala, etc</td>
</tr>
<tr>
<td>Animal Origin</td>
<td>By dye yielding insect</td>
</tr>
<tr>
<td>Animal Origin</td>
<td>Lac, cochineal, kermes, etc</td>
</tr>
<tr>
<td>Mineral Origin</td>
<td>Various inorganic metallic salts and metal oxides</td>
</tr>
</tbody>
</table>
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 reported\(^{10}\) 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 sores\(^{11}\).

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 showed\(^{12}\).

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

<table>
<thead>
<tr>
<th>Categories</th>
<th>Kingdom</th>
<th>Division</th>
<th>Class</th>
<th>Botanical Name</th>
<th>Family</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Red rose</td>
<td>Plantae</td>
<td>Magnoliophyta</td>
<td>Magnoliopsida</td>
<td><em>Rosa rubiginosa</em></td>
<td>Rosaceae</td>
</tr>
<tr>
<td>B. Paper flower</td>
<td>Plantae</td>
<td>Tracheophyta</td>
<td>Magnoliopsida</td>
<td><em>Bougainvillea spectabilis</em></td>
<td>Nyctaginaceae</td>
</tr>
<tr>
<td>C. Beetroot</td>
<td>Plantae</td>
<td>Tracheophyta</td>
<td>Magnoliopsida</td>
<td><em>Beta vulgaris</em></td>
<td>Amaranthaceae</td>
</tr>
<tr>
<td>D. Saffron</td>
<td>Plantae</td>
<td>Spermatophyta</td>
<td>Monocotyledoneae</td>
<td><em>Crocus sativus</em></td>
<td>Iridaceae</td>
</tr>
</tbody>
</table>

**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.1\(^{13}\). Was showed and taxonomical classification in table 2. *Crocus sativus* reported to have antitumor\(^{32}\), anti-inflammatory\(^{33}\), antioxidant\(^{34}\), antidepressant activity\(^{35}\) and also hyperlipidic\(^{36}\).

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

**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](image)

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

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Ingredients</th>
<th>Importance</th>
<th>Quantity taken</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>F1</td>
</tr>
<tr>
<td>1</td>
<td>Castor oil</td>
<td>Blending agent</td>
<td>4 gm</td>
</tr>
<tr>
<td>2</td>
<td>Paraffin wax</td>
<td>Glossy and hardness</td>
<td>5.6 gm</td>
</tr>
<tr>
<td>3</td>
<td>Bees wax</td>
<td>Glossy and hardness</td>
<td>7.2 gm</td>
</tr>
<tr>
<td>4</td>
<td>Rose petal extract</td>
<td>Coloring agent</td>
<td>2.5 gm</td>
</tr>
<tr>
<td>5</td>
<td>Paper flower extract</td>
<td>Coloring agent</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>Beet root extract</td>
<td>Coloring agent</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>Saffron</td>
<td>Coloring agent</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>Shikakai powder</td>
<td>Surfactant</td>
<td>0.4 gm</td>
</tr>
<tr>
<td>9</td>
<td>Lemon oil</td>
<td>Antioxidant</td>
<td>0.8 ml</td>
</tr>
<tr>
<td>10</td>
<td>Vanilla essence</td>
<td>Preservative</td>
<td>q.s.</td>
</tr>
<tr>
<td>11</td>
<td>Orange essence</td>
<td>Flavoring agent</td>
<td>1 ml</td>
</tr>
<tr>
<td>12</td>
<td>Mica powder</td>
<td>Texture</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:** q.s: quantity sufficient

The herbal lipstick was formulated as per method described was reported. 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](image)

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

**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 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.

**Thixotrophy 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)

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Evaluation parameters</th>
<th>F1</th>
<th>F2</th>
<th>F3</th>
<th>F4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Colour</td>
<td>Orange brownish</td>
<td>Redish orange</td>
<td>Redish brownish</td>
<td>Yellowish orange</td>
</tr>
<tr>
<td>2</td>
<td>pH</td>
<td>6.8±0.1</td>
<td>6.5±0.3</td>
<td>6.5±0.1</td>
<td>6.5±0.3</td>
</tr>
<tr>
<td>3</td>
<td>Skin irritation test</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>4</td>
<td>Melting point</td>
<td>50-58</td>
<td>60-61</td>
<td>60-61</td>
<td>55-60</td>
</tr>
<tr>
<td>5</td>
<td>Breaking point</td>
<td>30</td>
<td>31</td>
<td>27</td>
<td>30</td>
</tr>
<tr>
<td>6</td>
<td>Thixotrophy character</td>
<td>8</td>
<td>9</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>7</td>
<td>Force of application</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
</tr>
<tr>
<td>8</td>
<td>Surface anomalies</td>
<td>No defect</td>
<td>No defect</td>
<td>No defect</td>
<td>No defect</td>
</tr>
<tr>
<td>9</td>
<td>Perfume stability</td>
<td>+++</td>
<td>+++</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td>10</td>
<td>Aging stability</td>
<td>Smooth</td>
<td>Smooth</td>
<td>Smooth</td>
<td>Smooth</td>
</tr>
<tr>
<td>11</td>
<td>Solubility test</td>
<td>Ethanol</td>
<td>Water</td>
<td>Ethanol</td>
<td>Water</td>
</tr>
</tbody>
</table>

**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, thixotrophy, 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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