



## FORMULATION & EVALUATION OF HERBAL LIPSTICK FROM CITRULLUS LANATUS & CURCUMA LONGA

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### ABSTRACT:

In current running technology cosmetics has high demand in the market with fewer side-effects. Herbal cosmetics has eco-friendly nature substance with causes lesser adverse effects. At present herbal cosmetics are the trending in fashions. Most of the herbal cosmetics are nature-based cosmetics. Lipstick is an herbal cosmetic which contains pigments, oils, waxes which protect and applies colour and texture to the lips. Lipstick is a general cosmetic that is worn by women. The current work is aimed to prepare an herbal lipstick from colour pigments of *curcuma longa* and *Citrullus lanatus* and the preparation consists of ingredients such as olive oil, bees wax, white soft paraffin, acacia, coloured pigment of *curcuma longa*, & *Citrullus lanatus*, strawberry, lemon juice & vanilla essence. Due high side effects of the chemicals, natural products are used for the formulation. The prepared formulation is evaluated for various parameters such as P<sup>H</sup>, melting point, skin irritation test, solubility test, breaking point etc. were performed for safe and effective use of the formulation.

**Keywords:** Curcuma longa, Citrullus lanatus, lipstick, herbal, cosmetics, pigment Eco-friendly.

DOI Number: 10.14704/NQ.2022.20.12.NQ77086

NeuroQuantology2022;20(12): 1048-1054

### INTRODUCTION:

Lipstick is one of the decorative cosmetic products that command a unique market segment. Lipsticks are the common colour cosmetics used by women in their daily life. The essential factors are pleasant colour, safety, smell, luster, stability, adhesion & extensibility. Usually, customers are concerned more about the feel, colour & lasting effects of lipstick. It has been used for many years to impart colour to the lips. The colour helps to define the mouth area while imparting cosmetic shades that are suitable with fashion trends. The vast range of colours of lipsticks are derived from edible pigments. Every year, users are introduced with various new cosmetic products of the latest trend. Lipsticks contain a variety of emulsifiers, preservatives, emollients,

colorants & binders. The previous research proves that the quality of lipstick is directly linked to the basic materials that used in the formulation by varying the ratio of the ingredient in formulation, the final product characteristics such as viscosity, melting point, texture & hardness of the lipstick can be specified

### PLANT PROFILE

#### CITRULLUS LANATUS (WATERMELON):

Watermelon is a flowering plant species of the Cucurbitaceae family and the name of its edible fruit. It requires a long growing season in the subtropics, but fast growing in the tropical regions. Flowering and fruit development are promoted by high light intensity and high temperature.

#### TURMERIC:



Turmeric is also known as Indian saffron. It consists of dried as well as fresh rhizomes of the plant *curcuma longa* Linn. The chief constituent of the Colouring matter is curcumin I (60%) in addition with small quantities of curcumin III, curcumin II and

dihydrocurcumin. The volatile oil contains mono- and sesquiterpenes like zingiberene (25%),  $\alpha$ -phellandrene, sabinene, turmerone, arturmerone, borneol, and cineole. Choleric action of the essential oil is attributed to  $\beta$ -tolyl methyl carbinol

**MATERIALS**

| INGREDIENTS  | % (W/W)  | FUNCTION  |
|--|----------|---|
| Base:<br>Solid waxes (bees wax, carnauba wax, candelilla wax)<br>Softening waxes (wool fat, lanolin, lecithin, cocoa butter) | 10<br>15 | Provides hardness and creaminess, lubricates lipstick after application |
| Oil (castor oil, liquid paraffin)  | 65       | Dispensing the pigment and give high gloss to the lipstick              |
| Colouring agent  | Adequate | Give colour   |
| Perfumes   | Adequate | Give aroma  |
| Miscellaneous agents (Preservative, antioxidants, flavours)  | Adequate | Stabilize the formulation   |

**Table No 1 : List of materials**

**EXTRACTION OF PIGMENTS:**

**Preparation of yellow pigment (water-soluble & oil-soluble yellow pigment) extract from turmeric powder samples:**

- There are several steps to obtain curcumin from turmeric.
- First, turmeric was washed and sliced into small pieces (sizes of about 1 mm).
- The sliced turmeric was then dried at 50C to remove water. After that, the dried turmeric was grinded to become turmeric powder.
- Next, turmeric powder was dissolved in ethanol (95%) and heated at 50C in water bath for 1 hour.
- The solution then filtered and filtrate was put in rotary evaporator (at 90C) to remove excess ethanol in the filtrate. Finally, curcumin was obtained. Stored for further use.

**Different formulations of *curcuma longa***

| S. No | INGREDIENTS         | FORMULATION 1 | FORMULATION 2 | FORMULATION 3 |
|-------|---------------------|---------------|---------------|---------------|
| 1.    | Olive oil           | 2.6g          | 3.25g         | 3.9g          |
| 2.    | Bee's wax           | 0.4g          | 0.5g          | 0.6g          |
| 3.    | White soft paraffin | 0.6g          | 0.75g         | 0.9g          |
| 4.    | Acacia              | 1g            | 0.5g          | 1g            |
| 5.    | Curcumin            | 0.7g          | 0.8g          | 0.6g          |
| 6.    | Strawberry powder   | 0.1g          | 0.2g          | 0.1g          |
| 7.    | Lemon juice         | 1ml           | 1ml           | 2ml           |
| 8.    | Vanilla essence     | 0.5ml         | 1ml           | 0.5ml         |

**Table No 2: Different formulations of *curcuma longa***

**Extraction of color pigment from watermelon fruit:**



**METHOD**

- About 100g of a sample of watermelon is taken in a 250ml beaker.
- Then warm the paste and add about 30ml of warm(400c) benzene to it.
- Stir well and decant the benzene layer.
- Again, add 30ml of warm benzene, stir well and decant the benzene.
- This has been done about 5times then distinct off benzene and we got residue of lycopene recrystallized by ether and weighed .

**Different formulations of Citrullus lanatus**

| S. No | INGREDIENTS         | FORMULATION 1 | FORMULATION 2 | FORMULATION 3 |
|-------|---------------------|---------------|---------------|---------------|
| 1.    | Olive oil           | 2.6g          | 3.25g         | 3.9g          |
| 2.    | Bee’s wax           | 0.4g          | 0.5g          | 0.6g          |
| 3.    | White soft paraffin | 0.6g          | 0.75g         | 0.9g          |
| 4.    | Acacia              | 1g            | 1g            | 0.5g          |
| 5.    | Lycopene            | 0.6g          | 0.7g          | 0.8g          |
| 6.    | Strawberry powder   | 0.1g          | 0.1g          | 0.2g          |
| 7.    | Lemon juice         | 2ml           | 1ml           | 1ml           |
| 8.    | Vanilla essence     | 0.5ml         | 0.5ml         | 1ml           |

**Table No 3: Different formulations of Citrullus lanatus**

**EXPERIMENT PROCEDURE**

- Weight the required amount of both hard wax and soft waxes.
- Take a porcelain dish and add waxes according to their decreasing order of melting point and melt them.
- Now add concentrated amount of required pigment and add required amount of olive oil and heat them.
- Both the solutions are mixed together at the same temperature.
- Now add other ingredients such as acacia, strawberry powder, lemon juice and vanilla essence to the above mixture at 400 c.
- The prepared mixture was poured into lipstick moulds and kept in refrigerator or on ice bath.
- After solidification of mixture lipsticks were removed from the moulds and flamed.
- Now the lipsticks were fitted to the container and evaluated for further parameters

**EVALUATION OF FORMULATED LIPSTICK:**

*Colour and texture:*

Formulated lipsticks were checked for colour, glossy and smooth texture.

*Melting point:*

It is an indication for safety storage of the lipstick. Capillary tube method is used for the detection of melting point of formulated lipstick. Approximately 50mg of the sample was taken and melted and filled into a glass capillary tube opened at both the ends. Capillary was cooled with ice for 24hrs and increased with thermometer. The thermometer with capillary was kept in the beaker containing full of water which was placed on a heating plate with a magnetic stirrer. Heating and stirring were started slowly at a fixed speed. The temperature at which material moves along the capillary tube was considered as melting point

*PH test:*

PH of the prepared lipstick was determined using PH meter.

*Skin irritation test:*

The formulated lipstick was applied to skin for 10 min and tested for irritation of the skin.

*Thixotropy character:*



This is performed to check the depth of penetration by using penetrometer. Here, standard needle of specified diameter is allowed to penetrate into the lipstick for 5sec under certain load. The depth of the penetration of the needle is measured of thixotropy character of the herbal lipstick.

*Perfume stability study:*

The prepared herbal lipstick was tested for 30days, to record fragrance.

*Solubility test:*

The formulated lipstick was dissolved various type of solvents and determined its solubility.

*Surface anomalies test:*

Prepared lipstick was stored for 30 days and is detected for any abnormal growth of bacteria or formation of crystals etc. on the surface of the lipstick

*Aging stability:*

Store the product at 400 c for one hour and observe for various parameters like crystallization, application characters and bleeding of oil.

*Stability study:*

Performed to evaluate the spread ability and organoleptic properties like (colour, odour and appearance) are studied for 30 days. Formulation was stored at room temperature for 48 hours. According to the study parameters were checked at 3, 5, 7, 15 and 30 days.

*Determination of spreadability:*

It was tested repeatedly by applying the formulated lipstick over a glass slide to observe the uniformity of the formulation and observe whether there is and sticky fragment, deformation or broke during applications.

GOOD: uniform, fragments do not occur, perfect application, without deformation of lipstick

Intermediate: uniform, leave fragments, good application with little deformation.

Bad: no uniformity, fragments occur, difficult to apply and deformed.

*SOFTENING POINT TEST:*

Lipstick should be able to withstand range of conditions to which it will be subjected in the customer’s bag. It should be resistant to varying temperature conditions and be just as easy to apply in hot and as cold in weather. It is determined by ring ball method.

*Ring ball method:*

A ring or support orifice is taken and prepared herbal lipstick was inserted into it. Extra mass above and below tablet orifice was removed using a sharp blade leaving a tablet of a lipstick fitted into the ring. This was placed in refrigerator (60c) for about 10mins. Ring was tied onto a stand. A beaker containing 500ml water at room temperature is placed on a hot plate with magnetic stirrer. A steel ball was delicately placed on the lipstick tablet. The bar with support was then inserted into the beaker till it submerged into it. Heating and slow agitation was then begun. Temperature was monitored using a thermometer. The temperature at which the lipstick mass and steel balls were loosed and falls into the bottom of the beaker was noted as softening point of lipstick.

*Breaking point test:*

This test was carried out to find out the value of maximum load that lipstick withstand before it breaks. This test gives strength of lipstick. Prepared herbal lipstick was held horizontally in a socket inch away from the edge of support. The weight was gradually increased by specific value (10gm) at specific interval of 30 sec and weight at which breaks was considered as breaking point of the lipstick.

**EVALUATION OF HERBAL LIPSTICK FROM CITRULLUS LANATUS**

| S.NO | EVALUTION PARAMETER  | FORMULATION 1 | FORMULATION 2 | FORMULATION 3 |
|------|----------------------|---------------|---------------|---------------|
| 1.   | COLOUR & TEXTURE     | Light red     | Light red     | Light red     |
| 2.   | MELTING POINT        | 59-60         | 60-62         | 61-63         |
| 3.   | P <sup>H</sup>       | 6.4           | 6.5           | 6             |
| 4.   | SKIN IRRITATION TEST | No            | No            | No            |
| 5.   | THIXOTROPY CHARACTER | 8.5           | 8.9           | 9             |



|     |                                |                       |                       |                       |
|-----|--------------------------------|-----------------------|-----------------------|-----------------------|
| 6.  | PERFUME STABILITY STUDY        | ++                    | ++                    | +++                   |
| 7.  | SOLUBILITY STUDY               | Soluble in chloroform | Soluble in chloroform | Soluble in chloroform |
| 8.  | SURFACE ANOMALIES              | No defect             | No defect             | No defect             |
| 9.  | AGING STABILITY                | Smooth                | Smooth                | Smooth                |
| 10. | STABILITY STUDY                | No changes observed   | No changes observed   | No changes observed   |
| 11. | DETERMINATION OF SPREADABILITY | Good                  | Intermediate          | Good                  |
| 12. | SOFTENING POINT                | 59                    | 60                    | 61                    |
| 13. | Breaking point test            | 29                    | 30                    | 32                    |

**Table no 4: Evaluation of herbal lipstick from citrullus lanatus**

**EVALUATION OF HERBAL LIPSTICK FROM CURCUMA LONGA:**

| S.NO | EVALUTION PARAMETER            | FORMULATION 1       | FORMULATION 2       | FORMULATION 3       |
|------|--------------------------------|---------------------|---------------------|---------------------|
| 1.   | COLOUR & TEXTURE               | Yellow              | Yellow              | Yellow              |
| 2.   | MELTING POINT                  | 66-68               | 69-70               | 67-69               |
| 3.   | <sup>H</sup> <sub>P</sub>      | 6.8                 | 6.9                 | 6.7                 |
| 4.   | SKIN IRRITATION TEST           | No defect           | No defect           | No defect           |
| 5.   | THIXOTROPY CHARACTER           | 10.1                | 10.6                | 10.5                |
| 6.   | PERFUME STABILITY STUDY        | +                   | ++                  | +                   |
| 7.   | SOLUBILITY STUDY               | Soluble Methanol    | Soluble Methanol    | Soluble Methanol    |
| 8.   | SURFACE ANOMALIES              | No defect           | No defect           | No defect           |
| 9.   | AGING STABILITY                | Smooth              | Smooth              | Smooth              |
| 10.  | STABILITY STUDY                | No changes observed | No changes observed | No changes observed |
| 11.  | DETERMINATION OF SPREADABILITY | intermediate        | Intermediate        | good                |
| 12.  | SOFTENING POINT                | 66                  | 69                  | 67                  |
| 13.  | Breaking point test            | 31                  | 32                  | 30                  |

**Table No 5: Evaluation of herbal lipstick from curcuma Longa:**

**RESULTS & DISCUSSION:**

Herbal ingredients are used for formulation of herbal lipstick that containing coloring agents which are natural colorants obtained from Citrullus lanatus & Curcuma longa. Lipstick have been evaluated for different

evaluation parameters. After evaluation of it was found that the herbal lipstick of both formulations of Citrullus lanatus & Curcuma longa were found to be safe and effective in desired properties. 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 lips. Literatures revealed that the selected herbs *Citrullus lanatus* & *Curcuma longa* are herbal plants. Hence an attempt was made to formulate a herbal lipsticks and evaluate for its evaluation studies In the present study, herbal lipstick was prepared. The formulations were then evaluated for their physical parameters, melting point, PH, Skin irritation, perfume stability, solubility, surface anomalies, stability studies, softening point, thixotropic character, aging, breaking point test & determination of spread ability. These evaluation parameters were within the acceptable range.

#### CONCLUSION:

This research provides guideline on the use of herbal ingredients for the preparation of lipsticks having minimal or no side effects. The natural ingredients like Olive oil, used in the preparation of natural lipsticks along with *CITRULLUS LANATUS* & *CURCUMA LONGA* as coloring agent. The present study proves that both *CITRULLUS LANATUS* & *CURCUMA LONGA* are coloring agents and *CURCUMA LONGA* containing lipstick was best among both natural lipsticks. The prepared lipsticks were show excellent properties like shining, spreading and smoothness of lips. The research finding also provides a guideline on effects of ingredients towards the physical properties and consumer acceptance of the lipstick formulations.

#### REFERENCES:

1. Benett W. 1983. Benett's cosmetic formulary, II Edition chemical publishing company, New York pages 90-100.
2. A. khan 2000. Per Kembangan industry cosmetic, *Majalah Wanita*, page 9.
3. Awang Bono, Ho Chong Mun and Mariani Rajin 2006. Effect of various formulations on viscosity and melting point of natural ingredients-based lipstick. *Studies in surface science and catalysis*, volume 159: 693-696.
4. I. Iida 1992 recent trend of development of lipstick viewed from the point of touch and make-up effect, *Fragrance J.*, 20, 22-28.

5. Janet Simms 2003. A practical guide to beauty therapy for level 2, 3rd edition Nelson Thomes: United Kingdom pg: 181, 273
6. Sackheim, G.I. and D.D Lehman 1998. *Chemistry for health science* 8th edition. Prentice hall, New Jersey.
7. Nileshwari p. Chaudhari. September-2018. "A Review on herbal lipstick from different natural colouring pigments". *Indian journal of drugs*; 6 (3), 174-179
8. Benett W. 1983. Benett's cosmetic formulary, II Edition chemical publishing company, New York pages 90-100.
9. A. khan 2000. Per Kembangan industry cosmetic, *Majalah Wanita*, page 9.
10. Awang Bono, Ho Chong Mun and Mariani Rajin 2006. Effect of various formulations on viscosity and melting point of natural ingredients-based lipstick. *Studies in surface science and catalysis*, volume 159: 693-696.
11. I. Iida 1992 recent trend of development of lipstick viewed from the point of touch and make-up effect, *Fragrance J.*, 20, 22-28.
12. Janet Simms 2003. A practical guide to beauty therapy for level 2, 3rd edition Nelson Thomes: United Kingdom pg: 181, 273
13. Sackheim, G.I. and D.D Lehman 1998. *Chemistry for health science* 8th edition. Prentice hall, New Jersey.
14. Nileshwari p. Chaudhari. September-2018. "A Review on herbal lipstick from different natural colouring pigments". *Indian journal of drugs*; 6 (3), 174-179
15. Benett W. 1983. Benett's cosmetic formulary, II Edition chemical publishing company, New York pages 90-100.
16. Awang Bono, Ho Chong Mun and Mariani Rajin 2006. Effect of various formulations on viscosity and melting point of natural ingredients-based lipstick. *Studies in surface science and catalysis*, volume 159: 693-696.
17. I. Iida 1992 recent trend of development of lipstick viewed from the point of touch and make-up effect, *Fragrance J.*, 20, 22-28.





18. Janet Simms 2003. A practical guide to beauty therapy for level 2, 3rd edition Nelson Thomes: United Kingdom pg: 181, 273
19. Sackheim, G.I. and D.D Lehman 1998. Chemistry for health science 8th edition. Prentice hall, New Jersey.
20. Nileshwari p. Chaudhari. September-2018. 'A Review on herbal lipstick from different natural colouring pigments'. Indian journal of drugs; 6 (3), 174-179
21. Benett W. 1983. Benett's cosmetic formulary, II Edition chemical publishing company, New York pages 90-100.
22. Awang Bono, Ho Chong Mun and MarianiRajin 2006. Effect of various formulations on viscosity and melting point of natural ingredients-based lipstick. Studies in surface science and catalysis, volume 159: 693-696.

