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Original Research Article

The development and evaluation of a herbal lipstick formula utilizing a various extracts

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ABSTRACT

From ancient times to the present, there has always been an expanding market for cosmetics. There are a wide variety of cosmetic products on the market, including lipstick, kajal, mascara, and eye liner. Applying lipstick has several purposes, including improving one's appearance, making one more appealing, and protecting the lips. The market stocks it in a range of colours and shapes, including liquid and stick. Synthetic colourants included in lipstick are really bad for our skin since they are composed of chemicals. It causes a wide range of problems, including allergy, discomfort, rashes, chapped lips, and even cancer in extreme cases. For this reason, the demand for herbal cosmetics has expanded worldwide and the popularity of using herbs for beauty purposes has increased rapidly in recent years. Herbal lipsticks do not include any potentially harmful ingredients. Because of its various benefits, herbal lipstick should prevent lip dryness and cracking. The purpose of this research was to create and evaluate many formulations of a herbal lipstick made from extracts of the beetroot, rose petal and using papaya petiole as a mould. Prepared herbal lipstick was evaluated for a variety of characteristics, including smoothness, greatness, melting point, breaking point, and pH, etc.

1. Introduction

Cosmetics are any products that are used to improve one's outward look. Product including skin creams, lotions, powders, fragrances, lipsticks, nail polish, eye and face makeup, coloured contact lenses, hair dyes, hair sprays, gels, deodorants, baby products, bubble bath, bath salts, and many more are in high demand in both developing as well as developed nations. Natural herbal cosmetics are an extremely valuable gift from Earth, and their popularity is still only rising. For your beauty regimen, a variety of herbal cosmetic items are available. The preparations are herbal cosmetics, which stand for the category of cosmetics containing active bio-ingredients, nutraceuticals, or medicines. Herbs are employed in the cosmetics industry because of their many beneficial characteristics, including anti-oxidant anti-inflammatory, antiseptic, anti-bacterial, etc.[1,2]

Current study showed that the natural cosmetics are one of the most preferred skin care globally because they are believes to be safer than their chemically-based relatives and because they may cover the skin from harmful UV radiation. Lipstick, or crayon lip colour, is a cosmetic product that provides colour, texture, and protection to the lips via the use of pigments, oils, waxes, and emollients. Lipstick is one of the most popular makeup items. Some lip colours can be used as lip balms to keep your lips soft and glossy.[3]

It is a popular cosmetic option that may be made from either natural or artificial ingredients. Some of the heavy metals used in synthetic lipsticks are absorbed by the lips and stomach after application. These metals include nickel, copper, chromium, arsenic, and cobalt. The remaining is

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taken up by the skin's melanin and combines with other chemicals in the environment to produce a rash that most noticeably affects the lips. So, the lipsticks in particular need to be tested for irritation since they are applied directly to the lips, which may be quite sensitive. A precautionary skin and lip test is still necessary to rule out the risk of an allergic reaction. In contrast to the harmful consequences of synthetic chemicals, the herbal term serves as a symbol of protection for people's well-being. Compresses, tonics, pastes, shampoos, sindur, birth control, and even lipstick made from herbs are all on the rise in popularity.[4–6]

Herbal cosmetics are becoming more popular since they are safe for the skin and don't cause any irritation or other problems. Herbal cosmetics are sometimes commonly referred to as "natural cosmetics." First, a natural base is made, into which one or more herbal constituents are carefully combined.[3–5] Lip colouring has been a tradition since the prehistoric era. In recent days the usage of produIn Current era, lipsticks contain various hazardous chemicals that might cause health issues (dermatitis, allergy, dryness on lip). It turns the lips a dark shade of black as well.Synthetic dyes are very harmful if ingested by the user. In the worst case, it might lead to a dangerous type of cancer and other diseases.For this reason, in the current study, we can develop a herbal lipstick using various herbal pigments and mould. Tbelieved to have no or little negative effects.[3,7,8]

2. Experimental Work

2.1. Material and its role/importance

Various Ingredients used in the preparation of Lipstick listed below:[9]

Table 1: List of ingredients & its role

S. No.	Material/ingredients	Role
1	Bees wax	Thickening agent
2	Liquid paraffin	Base
3	Coconut oil	Moisturizing agent
4	Almond oil	Antioxidant
5	Acacia	Binder
6	Beta vulgaris/ Beetroot extract & Crocus sativus L./ Saffron	Lightening and softening agent
7	Rosa rubiginosa/ Rose extract	Colouring agent
8	Chocolate essence	Flavouring agent
9	Clove oil	Preservative
10	Carica papaya/ Papaya Petiole	Mould

2.2. Application of ingredient[2–4,8–11]

2.2.1. Bees wax

1. Beeswax used as thickening agent.
2. Bees wax used as emulsifying agent.
3. Bees wax is used as stiffening agents in cosmetics.
4. Bees wax is used in lip balm, lip gloss and some other cosmetic products.

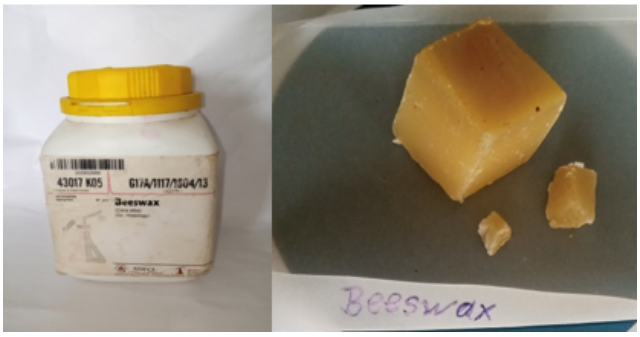

Fig. 1: Beeswax

2.2.2. Liquid paraffin

1. Liquid Paraffin is used to moisturizing the lip.
2. Liquid Paraffin is an emollient.
3. It is a substance that softens or soothes the skin.
4. It works by preventing water loss from the outer layer of skin.

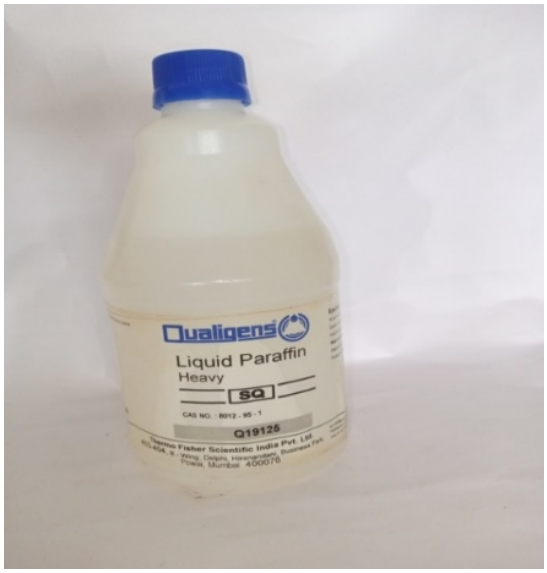

Fig. 2: Liquid paraffin

2.2.3. Coconut oil

1. Coconut oil is act as a moisturizing agent.
2. It relief from crack and chapped lips.
3. It is promoting wound healing.
4. It is contain antibacterial, antifungal, and antiviral properties.

Fig. 3: Coconut oil

2.2.4. Almond oil

1. Almond Oil helps to rejuvenate your lips by removing the dead skin cells.
2. It is prevent chapped lips and keeps them moisturized.
3. Vitamin E present in Almond Oil helps to keep your lips healthy and protects it from UV rays.

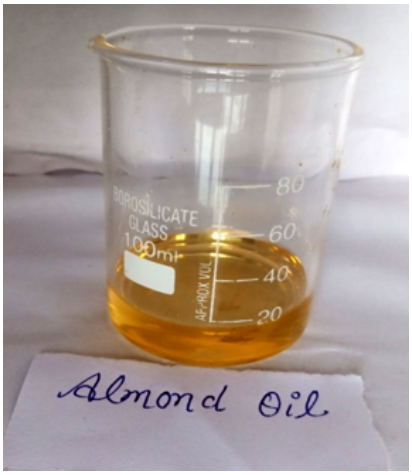

Fig. 4: Almond oil

2.3. Acacia

1. Acacia gum is a safe and natural stabilizer and act as demulcent in cosmetics.
2. Acacia is used for emulsifying agent.
3. It is used for maintenance the thickness of lipsticks.
4. It improves the texture of skin, smoothing over wrinkles and leaving the skin soft and supple.

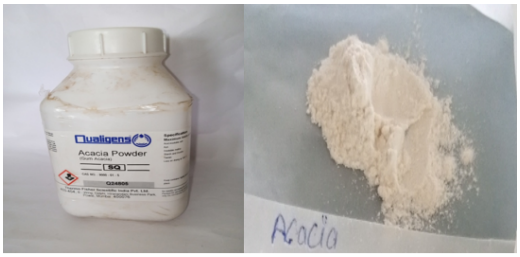

Fig. 5: Acacia powder

3. Beetroot extract

1. Beetroot is used to provide the skin with an abundance of nutrients.
2. Beet root powder can be used in lip balm/lip gloss recipes to naturally color them pink/red.
3. Beetroot is used for lightening, softening and antioxidant for lips.

Fig. 6: Beetroot & its extract

3.1. Saffron

1. Saffron is used as colouring agent.
2. Saffron is used for lightening the dark lips.
3. Saffron is used in cuisine as a spice, flavouring, colour, and taste enhancer. Saffron extracts are used in manufacturing as a scent in perfumery and as a dye for the textile industry.

Fig. 7: Saffron

3.2. Rose extract

1. It can help cleanse skin and prevent blemishes.
2. Clean and fight infection.
3. Improve the appearance of lip and act as a colouring agent.

Fig. 8: Rose petals and its extract

3.3. Chocolate essence

1. It is used to create a more natural aroma.
2. It is use as a flavouring agent.
3. It is used to give the pleasant odour/smell.

Fig. 9: Chocolate essence

3.3.1. Clove oil

1. Clove oil is useful against various bacterial pathogens. It also act as an antiseptic.
2. Clove oil is rich in minerals and contain high amount of anti-oxidant.
3. Clove oil helps in reducing the sagginess of the skin.
4. It prevents the appearance of fine lines and wrinkles.
5. It removes the dead skin cells and helps in blood circulation.

Fig. 10: Clove oil

3.3.2. Papaya petiole

1. Papaya petiole is used for herbal Lipstick Moulds.
2. It contain a high amount of nutritive content and papaya extract possess high level of lycopene.

Fig. 11: Papaya petiole

4. Method

4.1. Beetroot extraction method

Collection of plant material

The Beetroot fruit is collected in the months of September 2022. The fruits are procured from the local market of Lucknow, India.

Biological source: Beta vulgaris.

Family: Amaranthaceae.

Beetroot is usually known in Rural area as Cukandara and Beta vulgaris Linn herbal extracts used in formulation of herbal lipstick for the purpose of its lightening and softening property. It also possesses nourishing property (2,12).

4.1.1. Method of extraction

1. Washed beetroot are Peeled and cut it into uniform sized fine slices.
2. Small piece of beetroot pour in the grinder and grind it.
3. After the Grinding Beetroot extract is filter from the filter paper.
4. Then collect the Beetroot extract/filtrate in a suitable container and store it.

Fig. 12: Extraction of beetroot

4.2. Rose extraction method

4.2.1. Collection of material

The Rose flower is obtained in the month of September 2022. The flowers are collected from the LMCP herbal garden.

Biological name: Rosa rubiginosa.

Family: Rosaceae.

The Rose flowers extract used in formulation of herbal lipstick as a pigments/ colouring agent.[12]

4.2.2. Method of extraction

1. First of all collect the rose flower in LMCP herbal garden.
2. Separate the petal in the flowers and wash the petal.
3. Take a 50ml distilled water in a beaker and put the beaker on a heating mantle at 70ºC.
4. Water is heated then we infuse some amount of rose petal in a beaker at same time.
5. We took out the petal after the colour disappeared and then filter it with the help of filter paper.
6. Collect the Rose extract in a suitable container and store it.

Fig. 13: Collecting pigment

4.3. Preparation of blank moulds

4.3.1. Collection of plant material[3]

Papaya leaves are obtained in the month September 2022. Papaya leaves are collected from the LMCP herbal garden.

Biological source: Carica papaya.

Family: Caricaceae.

Blank Lipstick Mould is prepared from Carica papaya leaf of petiole.

4.3.2. Method of preparation of blank moulds

1. First of all collect the Papaya leaves in LMCP Herbal garden.
2. Separate the petiole in papaya leaves.
3. Petiole cut in uniform size and prepared the Blank mould.

Table 2: Ingredients and its quantity

Ingredients	Quantity		
	L-1	**L-2**	**L-3**
Beeswax	14gm	14gm	14gm
Liquid paraffin	6ml	6ml	6ml
Coconut oil	5ml	5ml	5ml
Almond oil	1ml	1ml	1ml
Acacia	1gm	1gm	1gm
Beetroot extract & Saffron	-	2ml	-
Rose extract	-	-	2ml
Clove oil	-	1 drop	1 drop
Chocolate essence	1 drop	1 drop	1 drop

Fig. 14: Blank moulds

4.4. Formulation of lipstick

Table Shown the Ingredients used in the manufacture of herbal lipstick with required amounts/quantity

4.5. Procedure for the preparation of herbal lipstick[2,13]

1. The composition of the herbal lipstick followed the standard method to produce lipstick.
2. In this procedure, Bees wax is melted in a beaker on a heating mantle adjusted to 70 degrees Celsius.
3. In the same manner, Liquid paraffin, almond oil and coconut oil (oil phase) was melted in a beaker placed on a heating mantle at a temperature of 70 degrees Celsius.
4. After mixing of oil phase mixture is cooled and then Acacia is added in oil phase and mixed properly.
5. Both the Beet root extract and the saffron (colouring pigment) were added to the oil phase until a uniform combination was achieved.
6. After this, chocolate essence and clove oil are mixed in oil phase and mixed it.
7. After that, it was combined with the wax phase during the same temperature.
8. The molten solution was placed into lipstick moulds once it had been prepared. After the process of solidification, it was removed from the moulds (cut the lipstick mould using knife or blade) and placed in the lipstick case.

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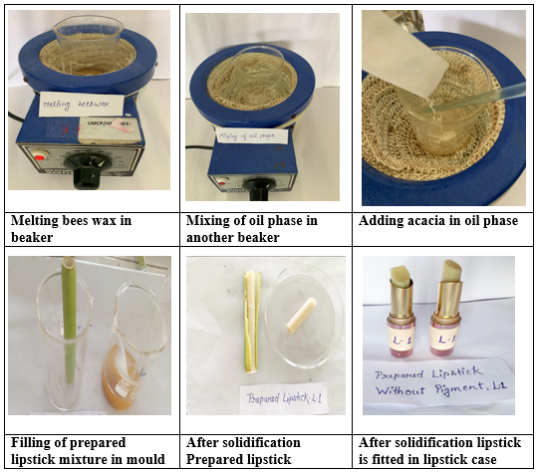

Fig. 15: Images of L-1 Lipstick

4.6. Evaluation of lipstick[2,14]

In order to assess the quality of the finished herbal lipstick, we used the following parameters include:

Organoleptic parameter, pH breaking point, melting point, surface anomalies, force of application, aging stability, solubility, skin irritation test and spreadability test using recommended procedure. The results of the study are presented in Table 3.

1. *Colour and texture*- After formulating lipsticks, we made sure they were the right shade, had the ht amount

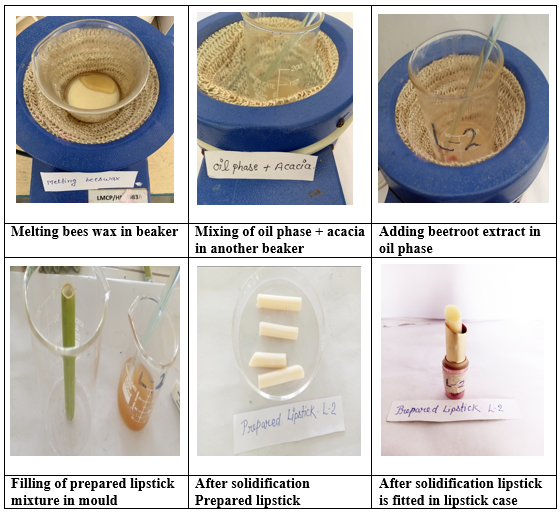

Fig. 16: Images of L-2 lipstick

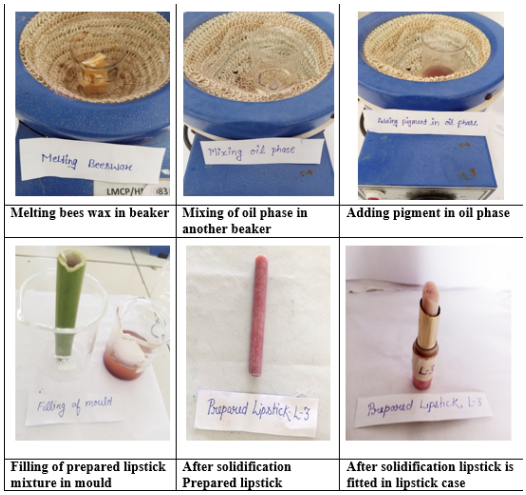

Fig. 17: Images of L-3 lipstick

Fig. 18: Prepared lipstick L-1, L-2 and L-3

of shine, and had a smooth, creamy texture.

2. *Smell-* Smell was determined in two ways. One was by placing the sample on a hot plate. The second method involves inhaling a direct sample from 25 people, both male and female.
3. *pH-* Each sample was examined three times, and the average of those values served as the final readings. pH paper was used to measure the pH of herbal lipstick formulations.
4. *Solubility test-* We tested the solubility of the herbal lipstick formulation by dissolving it in a number of different solvents.
5. *Melting point-* The melting point is a crucial parameter in lipstick development since it indicates the maximum storage time that may be safely tolerated. Capillary tube testing method was used to evaluate the lipstick formulation's melting point.
6. *Breaking point-* The purpose of this experiment was to determine the greatest force that could be exerted on a lipstick before it cracked. Lipstick is made stronger by this test. Herbal lipstick in its prepared form was horizontally placed in a socket about an inch from the edge of the support. Every 30 seconds, the load was raised by a fixed amount (10 g), and the breaking weight was recorded.
7. *Surface anomalies/External irregularity-* In this we examined surface defects like crystal formation, formation of solid fatty substances. Contamination through mould, fungi, and any other contamination.
8. *Fragrance stability-* After 30 days, the fragrance/smell of the herbal lipstick composition was evaluated by inhaling a direct sample from 25 people, both male and female.
9. *Skin irritation test-* The procedure involves applying the product directly to the skin for 10 to 15 minutes and any symptoms of irritation was evaluated.
10. *Aging stability-* The prepared herbal lipstick was kept for one hour at the temperature of a refrigerator (40 degrees Celsius), room temperature (20 to 250 degrees Celsius), and hot temperature (30 to 400 degrees Celsius). Several criteria, including streaking, catering, and blooming, crystallization were evaluated in this study.
11. *Force of application/ Spreadability test-* In this test, lipstick was applied repeatedly to the glass slide to check for breakage, distortion/bending, and splintering during application as well as to evaluate the consistency/uniformity of the protective coating.

    a. *Good:* there are no irregular spots, the lipstick is applied smoothly, and there is no distortion.
    b. *Intermediary:* consistent yet with some smudges/spots and stains here and slightly distorted but satisfactory applications.

c. *Bad:* Deformed, hard to apply, and fragmented, everything is not uniform leaves behind a lot of little pieces.

12. *Acceptance-* Twenty-Five female volunteers participated in acceptance research in which three different formulations of a herbal lipstick were tested out and the percentage of approval was determined.

5. Evaluation Result

Table 3: Evaluation result of herbal lipstick formulation

S. No.	Parameters	Inference		
		L-1	L-2	L-3
1	Colour, Texture	Colourless, smooth	Colourless, smooth	Pink, Smooth
2	Smell	Aromatic	Aromatic	Aromatic
3	pH	6.2 ± 0.5	6.5 ± 0.5	6.5 ± 0.5
4	Solubility test	-	-	-
5	Melting point	60-65 ℃	60-65 ℃	55-60 ℃
6	Breaking point	30gm	30gm	20gm
7	Surface anomalies	No	No	No
8	Fragrance stability	Good	Good	Good
9	Skin irritation test	No irritation	No irritation	No irritation
10	Aging stability	Smooth	Smooth	Smooth
11	Force of application/ Spreadability test	Good	Good	Good
12	Acceptance	+++	++	+++

6. Conclusion

The above study and research found that herbal lipstick is better for people's than chemically made lipstick. It provides the right medicinal properties, better nourishes, and treats a variety of lip issues. Some herbal/natural elements such bees wax, coconut oil, almond oil, beetroot & rose extract, etc and papaya mould may be used to effectively manufacture herbal lipstick. Additionally, it has been shown that using natural colorants in lipstick composition has very little to no negative effects. After extensive clinical studies and evaluation Properties like melting point, breaking point, skin irritation, and spread ability are determined/proven to be proven to be a suitable/satisfactory product for offering lips nutrition and attractive appearance. Hence, the produced lipstick may thus be used safely and effectively.

7. Source of Funding

None.

8. Conflict of Interest

None.

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