



FORMULATION AND EVALUATION OF NATURAL LIPSTICKS FROM COLOURED PIGMENTS OF DIFFERENT HERBAL PLANTS

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ABSTRACT:

Cosmetics are the substance used to alter the appearance or fragrances of the human body. Nowadays the demands for herbal cosmetics in the world market are growing and are inevitable gifts of nature. There is a wide range of herbal cosmetic products to satisfy the need of women. Lipstick is a cosmetic product containing pigments, oils, waxes, and emollients that apply colour, texture, and protection to the lips. Many varieties of lipstick exist as with most other types of makeup, lipstick is typically, but not exclusively, worn by women. This study aimed to extract dyes from the different plant and utilize them in the manufacture of cosmetics, especially lip color preparations. The research included material collection and plant determination, dye extraction and lipstick preparations made, safety tests. The objective of the present work is to extract the coloured pigments from herbal plant the formula for the preparation of lipstick and evaluate the prepared formulations.

KEY WORD: Lipstick, Dye Extraction, Herbal, Cosmetics.

1. INTRODUCTION:

Lipstick may be basically defined as dispersion of the colouring matter in a base consisting of a suitable blend of oils, fats and waxes with suitable perfumes and flavours moulded in the form of sticks to impart attractive gloss and colour, when applied on lips. Lipsticks provide moist appearance to the lips accentuating them and disguising their defects.

The word herbal is a symbol of safety in contrast to the synthetic one which has adverse effects on human health. Herbal preparations viz., herbal tablets, herbal tonics, herbal paste, herbal shampoo, herbal contraceptives and herbal lipstick has become popular among the consumer herbal medicines represent the fastest growing segment to heal the various ailments. Possibly, herbal user desire to assume control over health care needs. Cosmetics are substances used to enhance the appearance of the human body. Cosmetics include skin-care creams, lotions, powders, perfumes, lipsticks, fingernail and toe nail polish, eye and facial makeup, permanent waves, colored contact lenses, hair colors, hair sprays and gels. Deodorants, baby products, bath oils, bubble baths, bath salts, butters and many other types of products are in great demand in both developing and developed countries. Human being have been using herbs for different purpose like food, medicine, beautifying with advancement of science and technology use of natural things including plant has been reduced except for food, vegetarian takes plant & plant only. However there is resurgence of use of herbs both as drug and cosmetics.

Since ancient Egypt, cosmetics have been available. At that time, the use of cosmetic preparations was always associated with events that were mystical, astrological, religious, or other events that were artistic and sacred. Cosmetics preparations are often used as skincare to slow down the aging process, as well as to increase attractiveness so that a person can look healthy and attractive. One of the cosmetic preparations that are widely used to increase traction, change the shape of the lips, so it looks more beautiful is lip color. In general, lipstick dosage forms are stems, but there are also other dosage forms such as ointments, liquid, pencil, transparent, and others. Lip color is one of the most popular decorative cosmetics by women ranging from teenagers, adults, to the elderly.

A lip coloring formula in the form of bars, ointments, or liquid generally consists of oil, wax and dyes. According to other literature, what is meant by lip coloring is a lip cosmetic preparations in the form of a dispersion of dyes in a mixture of oil, fat, and wax. Dyes used can be natural dyes, synthetic dyes, or inorganic dyes. In general, the use of natural dyes is more preferred than synthetic or inorganic dyes, because both of these dyes can cause undesirable side effects, such as itching, irritation, or red spots. The natural dyes can be obtained from plants, animals, or minerals.

1.1 IDEAL CHARACTERISTICS OF GOOD LIPSTICKS:

- ✚ The ideal requirements for the formation of a good lipstick may be as follows:
- ✚ It should efficiently cover lips with colour and impart a gloss which would last long.
- ✚ It should be able to maintain the intensity of colour without any alteration in the degree of its shade.
- ✚ It should be able to adhere firmly to the lips and should not provide any greasy appearance.
- ✚ It should possess good thixotropic property so as to deposit the colour with minimum pressure.
- ✚ It should show a smear proof coloring effect.

- ✦ It should possess required plasticity and be able to maintain all the properties throughout the storage period.
- ✦ It should not be gritty.
- ✦ It should be easily dried.
- ✦ The stick should possess even firmness and should maintain its strength at varying temperatures up to 55°C.
- ✦ The stick should not dry or crumble easily.
- ✦ The lipstick should possess a pleasant fragrance and a good flavour.
- ✦ Should be safe and non-irritating to the lips.
- ✦ Result in blooming or sweating of the lips.



Figure No : 1 Lipstick

1.2 ANATOMY OF LIPS:

Lips are soft, movable body part at the mouth of humans and helps for the intake of food and speech. ‘‘Labium superius ores’’ and ‘‘Labium inferiors ores’’, are the upper and lower lips respectively. The meeting point where the lips joint the surrounding skin of smooth area is the vermilion border and reddish area within the border is called the vermilion zone. Cupid’s bow is the vermilion border of upper lips. The fleshy protuberance located in the center of the upper lip is a tubercle. known by various terms including the procheilon (also spelled prochilon), the "tuberculum labiisuperioris", and the "labial tubercle". The skin of the lip, with three to five cellular layers, is very thin compared to typical face skin, which has up to 16 layers. With light skin color, the lip skin contains fewer melanocytes (cells which produce melanin pigment, which give skin its color). Because of this, the blood vessels appear through the skin of the lips, which leads to their notable red coloring. With darker skin color this effect is less prominent, as in this case the skin of the lips contains more melanin and thus is visually darker. The skin of the lip forms the border between the exterior skin of the face, and the interior mucous membrane of the inside of the mouth.

The lips serve as an organ of suction and speech. It is composed of the skin, superficial fascia, orbicular is a muscle and the muscles inserted around it (Areolar tissue and mucous membrane) the margins of the lips are capped with dry, red mucous membrane, continuous with the skin and containing numerous vascular papillae and touch corpuscles. The mucous membrane internally is reflected from the upper and lower lip upon the gums, and in the median line forms two folds of superiors and inferiors. The areolar tissue or submucous layer contains the coronary vessels which completely encircle the buccal orifice near the free margin of the lips.

The upper lip covers the anterior surface of the body of the maxilla. Its upper half is of usual skin color and has a depression at its center, directly under the nasal septum, called the philtrum, which is Latin for lower nose, while its lower half is a markedly different, red-colored skin tone more similar to the color of the inside of the mouth, and the term vermilion refers to the colored portion of either the upper or lower lip. It is raised by the levator labiisuperioris and is connected to the lower lip by the thin lining of the lip itself, which can be seen by opening your mouth wide in front of a mirror.

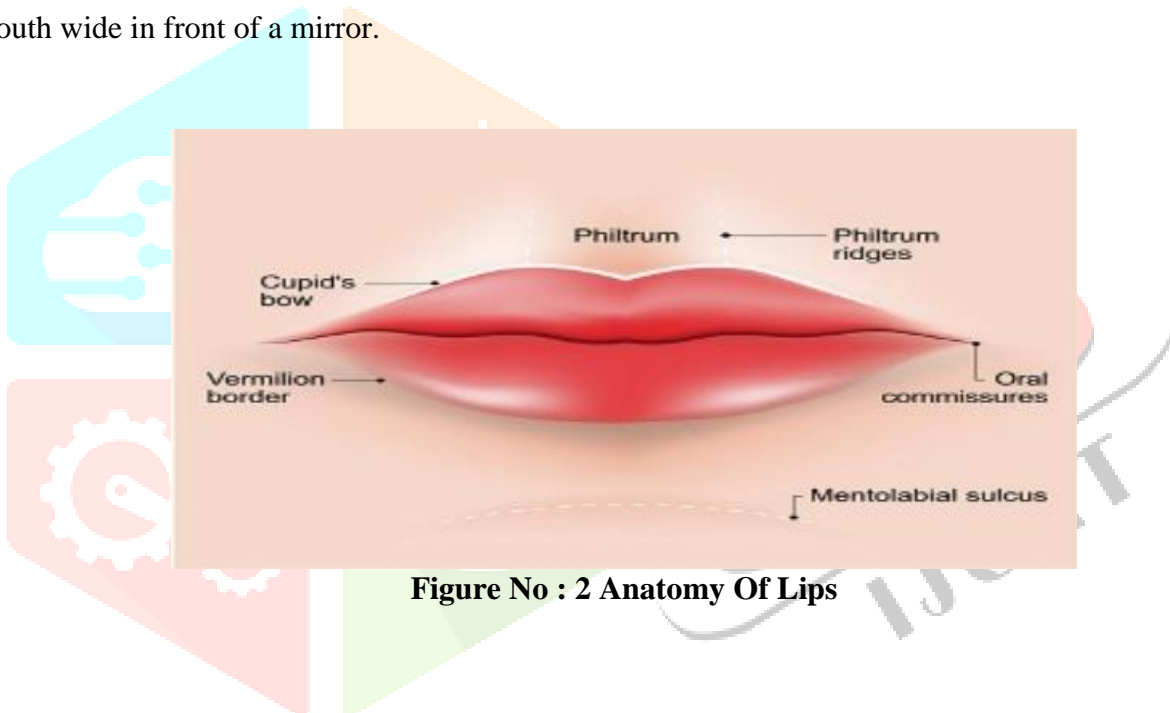








Figure No : 2 Anatomy Of Lips

2. PLANT PROFILE:

S. No	NAME OF THE PLANT	NAME OF THE PLANT	FAMILY	MAIN CHEMICAL PIGMENT-COLOR
1.	Pumpkin flower 	Cucurbita pepo flower extract	Cucurbitaceae	Carotene and Anthocyanin-Bright Orange yellow
2.	Beetroot 	Beta vulgaris (beet) extract	Amaranthaceae	Betanine-Red/Pink
3.	Prickly pear 	Opuntia stricta fruit extract	Cactaceae	Betanin-Purple
4.	Cochineal 	Dactylopius coccus dust extract	Dactylopiidae	Carmine-Red/Purple
5.	Carrot root 	Daucuscarota sativa root extract	Apiaceae	Betacarotene-Orange
6.	Orange peel 	Citrus Aurantium Dulcis (orange) peel extract	Rutaceae	Carotenoids-Orange/Yellow





7.	<p>Grapes</p> 	Vitis vinifera berry extract	Vitaceae	Anthocyanins - Red/Purple
8.	<p>Red cabbage</p> 	Brassica oleraceae leaf extract	Brassicaceae	Anthocyanins (Cyanidin)- Red/Purple
9.	<p>Mint</p> 	Menthapiperita	Lamiaceae	Chlorophyll-Green
10.	<p>Indian nettle</p> 	Acalyphaindica	Euphorbiaceae	Chlorophyll-Green

Table No : 1 Plant Profile

3. MATERIALS AND METHODS:

3.1 LIST OF CHEMICALS:

List of chemicals used in Bees wax, White soft paraffin, Castor oil, Acacia, Lemon juice, Vitamin E, Vanilla essence, Perfume, pigments.

3.2 PIGMENT EXTRACTION PROCEDURE :

3.2.1 Extraction Of Colour Pigment From Beetroot:

Beetroot is the main supply box natural red dye called "Beetroot red". Betaine is the main part of the red colorants extracted from common beet. Extraction of pigment is by homogenization of equal ratio of fruit pulp and solvents (1/1 w/v). Take 100 g of the peeled fruit, of a watery consistency, and macerated it with 100 ml. Solvents (Ethyl alcohol and aqueous ethanol - 50: 50) for 15 min under ice bath. Centrifuge the aqueous mixture at 10,000 RPM, 40 °C for 20 min, and filter immediately through Nylon mesh by using rotary evaporation to concentrate the extract in vacuum at 350 °C, to 3 to 4 ml. Completely remove the alcohol through the concentration process and keep the samples in a dark vessel.

3.2.2 Extraction Of Colour Pigment From Carrot:

The carrot is a fruit or vegetable containing a large amount of carotenoid compound and that can be used as a natural dye. Dry the fresh carrot at 40 °C in an oven. Coarsely powder the sample using a mixer grinder. Mix 50 g of this air-dried sample with 450 ml of 95 % ethanol. Then incubate it for 24 h and filter it. Evaporate the solvent under vacuum and keep extract at 40 °C

3.2.3 Extraction Colour Pigment From Waste Orange Peels:

About a 6 g sample was prepared from orange peels and placed in a Soxhlet tube thimble and extracted using three different solvents acetone respectively using a Soxhlet apparatus. The extraction time for each solvent was 45min until the solvent became colourless. The crude extract was directly transferred to a cooling centrifuge for about 10 min at 1000 RPM at 80 °C. The extracted sample was then dried using anhydrous Magnesium sulfate and the supernatant transferred to a lyophilised apparatus to remove all the excess, solvent.

3.2.4 Extraction Of Colour Pigment From Red Cabbage:

The collected red cabbage was washed thoroughly and the leaves were sliced into small pieces and oven-dried at 50 °C. Dried plants (100 g) were extracted. The use of dry plants can be effective to minimize enzymatic degradation of phenolic compounds inside the plant tissues after overnight maceration, the extract was filtered through gauze, and water was evaporated under reduced pressure at 500 °C. After evaporation, the extract is lyophilized.

3.2.5 Extraction Of Color Pigment From Prickly Pear:

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

3.2.6 Extraction Of Color Pigment From Cochineae:

About 100 g of a sample of prickly pear taken in a 250 ml beaker. Then warm the paste and add about 30 ml of warm (400 °C) water to it.. This has been done about 5 times then distinct off we got residue of recrystallized residue by ether and weighed.

3.2.7 Extraction Of Colour Pigment From Pumpkin Flower:

The shade-dried coarsely powdered of pumpkin flower (100 g) were extracted with ethanol (60 to 800 °C) for 18 h (1:2 ratios). After completion of extraction, the defatted 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 to 1/10. The concentrated extract was transferred to a 100 ml beaker and the remaining solvent was evaporated on a water bath. The yellow colored extract was obtained.

3.2.8 Extraction Of Colour Pigment From Grapes Fruit:

The ripe grapes fruits were selected based on the red colour of the peel that indicated mature fruits and no black spots or blemishes for about a few seconds. After that, the arils of the fruit were then extracted with a maceration process in an alcoholic solvent (ethanol) in the ratio of 1:4, which means that 400 ml of ethanol was used to be macerated with 100 g of arils of fruits. The red-purple filtrate that was leftover was clear liquid without sedimentation. Furthermore, the filtrates were then evaporated for approximately 5 days to remove the solvent in the dark.

3.2.9 Extraction Colour Pigment From Mint:

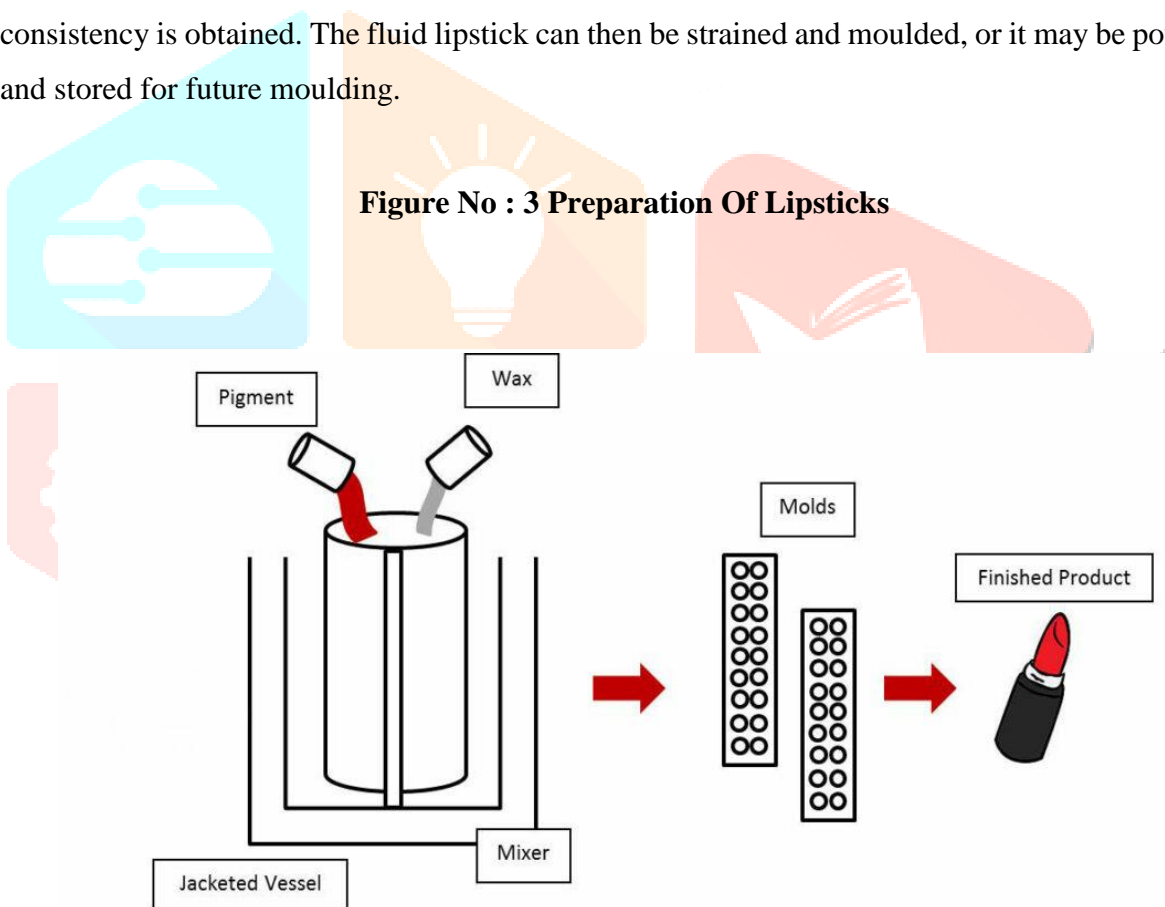
The samples of dry mint were extracted using acetone and hexane (1:2 v/v). The oleoresin- containing solvent (green pigment extract) was concentrated by rotary evaporation under vacuum at 40 °C and placed in a glass bottle and stored until used. Then the water soluble green pigment or the liquid colour was developed from oleoresin (50 ml concentrate) by adding 10 ml of polysorbate (Tween 80) followed by mixing in the mixer for 2 min. The oil-soluble mint green pigment in petroleum ether and hence used for crystallization. To 50 ml of concentrated oleoresin in alcohol 100 ml of petroleum ether was slowly added and vortexed and manually for 10 min and allowed to stand for 30 min. The top layer was decanted, concentrated under vacuum at 40 °C and placed in a glass bottle, and stored at 40 °C until used.

3.2.10 Extraction Colour Pigment From Indian Nettle:

The samples of dry indian nettle were extracted using acetone and ethanol (2:3 v/v). The solvent (green pigment extract) was concentrated by rotary evaporation under vacuum at 40 °C and placed in a glass bottle and stored until used.

3.3 METHODOLOGY:

- ✦ First, the raw ingredients for the lipstick are melted and mixed—separately because of the different types of ingredients used.
- ✦ One mixture contains the solvents, a second contains the oils, and a third contains the fats and waxy materials. These are heated in separate stainless steel or ceramic containers.
- ✦ The solvent solution and liquid oils are then mixed with the colour pigments.
- ✦ After the pigment mass is prepared, it is mixed with the hot wax.
- ✦ The mixture is agitated to free it of any air bubbles. Then it is poured into tubing moulds, cooled, and separated from the moulds. After final touch-up and visual inspection, the lipstick is ready for packaging.
- ✦ Mixture is ground using a mill, grinding the pigment to avoid a "grainy" feel to the lipstick.
- ✦ After the pigment mass is ground and mixed, it is added to the hot wax mass until a uniform colour and consistency is obtained. The fluid lipstick can then be strained and moulded, or it may be poured into pans and stored for future moulding.



3.4 FORMULATION OF LIPSTICKS:

S.NO.	INGREDIENT	F1	F2	F3	F4	F5
1.	Bees wax	14gm	14gm	14gm	14gm	14gm
2.	White soft paraffin	6gm	6gm	6gm	6gm	6gm
3.	Castor oil	2ml	2ml	2ml	2ml	2ml
4.	Acacia	1.5gm	1.5gm	1.5gm	1.5gm	1.5gm
5.	Lemon juice	1to3 drop	1to3 drop	1to3 drop	1to3 drop	1to3 drop
6.	Vitamin E	1ml	1ml	1ml	1ml	1ml
7.	Vanilla essence	1ml	1ml	1ml	1ml	1ml
8.	Perfume	q.s	q.s	q.s	q.s	q.s
9	Pigments	1.5gm	5gm	2.5gm	2.5gm	4gm

Table No : 2 Formulation Of Lipsticks F1 to F5

S.NO.	INGREDIENT	F6	F7	F8	F9	F10
1.	Bees wax	14gm	14gm	14gm	14gm	14gm
2.	White soft paraffin	6gm	6gm	6gm	6gm	6gm
3.	Castor oil	2ml	2ml	2ml	2ml	2ml
4.	Acacia	1.5gm	1.5gm	1.5gm	1.5gm	1.5gm
5.	Lemon juice	1to3 drop	1to3 drop	1to3 drop	1to3 drop	1to3 drop
6.	Vitamin E	1ml	1ml	1ml	1ml	1ml
7.	Vanilla essence	1ml	1ml	1ml	1ml	1ml
8.	Perfume	q.s	q.s	q.s	q.s	q.s
9	Pigments	6gm	5gm	7gm	3.5gm	6gm

Table No : 3 Formulation Of Lipsticks F6 to F10



Figure No : 4 Formulation Of Pigments Containing Lipsticks

4. EVALUATION OF LIPSTICKS:

4.1 MELTING POINT DETERMINATION TEST:

The determination of melting point is done in order to determine the storage characteristics of the product. The inciting point of lipstick base should be between 60 to 65°C in order to avoid the sensation of friction or dryness during application. The method of determination is known as capillary tube method:

- (a) In this method, about 50 mg of lipstick is taken and is inserted into a glass capillary tube open at both ends.
- (b) The capillary tube is ice cooled for about hours and then placed in a beaker containing hot water and a magnetic stirrer.
- (c) The temperature at which material starts moving through the capillary is said to be the melting point temperature.
- (d) Another important parameter is the droop point which determines the temperature at which the product starts oozing out the oil and becomes flattened out.
- (e) The melting point should be higher than the droop point which determines the safe handling and storage of finished product.

4.2 BREAKING LOAD POINT TEST:

This test is done in order to determine the strength and hardness of the lipstick. In this method, the lipstick is placed horizontal position 1 inch from the base and weights with increasing loads are attached to it. The weight at which the lipstick starts breaking, known as the breaking load point. The test shall be carried out in specific condition and at about 25 ° C temperatures.

4.3 TEST FOR THE APPLICATION FORCE:

This is a test to determine the force to be applied during application. In this method, two lipsticks are cut to obtain flat surfaces which are placed one above other. A smooth paper is placed between them which is attached to a dynamometer to determine force required to pull the paper indicates the force application.

4.4 DETERMINATION OF SURFACE CHARACTERISTICS:

The study of surface property of the product is carried out in order to check the formation crystal on the surface or the contamination by microorganism or formation of wrinkles and the exudation of liquid.

4.5 IRRITATION TEST RESULTS:

It was found that after irritation testing of each lip color formula for 20 volunteers, all of the formula did not cause an irritation reaction. This was evidenced by the absence of symptoms of irritation caused by the onset of red skin, itching, bumps, or swelling. Hence, it could be said that the lip color made with variations in the concentration of the color, was quite safe to use.

4.6 SURFACE ANOMALIES

This was studied for the surface defects, such as no formation crystals on surfaces, no contamination by moulds, fungi etc.

4.7 AGING STABILITY:

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

4.8 SOLUBILITY TEST:

The formulation herbal lipstick was dissolved in various solvents to observe the solubility.

4.9: ACCEPTANCE:

The acceptance study carried to study acceptance of the products, for this study the ten formulations of the herbal lipstick shown to the female volunteer and percentage of acceptance was calculated out of 10 marks.

5. RESULT AND DISCUSSION:**5.1 PHYSICAL EVALUATION:**

FORMULATION	COLOUR	PH	SKIN IRRITATION	MELTING POINT	BREAKING POINT
F1	Chocolate Yellow Ivory	6.5	Nil	62°C	27
F2	Light Peach Shimmer	6.5	Nil	60°C	30
F3	Red White	6.5	Nil	54°C	31
F4	Cherry Red	6.9	Nil	58°C	32
F5	Light Coral	6.6	Nil	60°C	28
F6	Pastel Yellow	6.5	Nil	57°C	33
F7	Blueberry Pie	6.3	Nil	58°C	31
F8	Smokey Violet	6.3	Nil	53°C	32
F9	Ice Age Grey	6.8	Nil	60°C	30
F10	Jade Green	6.7	Nil	60°C	30

Table No : 4 Physical Evaluation

Result showed that all evaluation parameters of lipstick are resemble with standard value. The melting point of a lipstick indicates the safe limit of storage. The standard melting point of lipstick above 50°C in order to remain its rigid structure and do not melt in room temperature. The melting point of formulated lipstick was evaluated and results indicates that formulation F1 has highest melting point compared to other formulation

The P^H of the formulated lipsticks was evaluated and the result it was found that formulation F4 range 6.9 compared to other formulation.

The breaking point is done to determine the strength of lipsticks. The lipstick to held horizontally in socket ½ inches away from the edge of support. The weight is gradually increased by a specific value 10gm at specific interval of 30 second and weight at which breaks is considered as the breaking point at found that formulation F6 was 33 compared to other.

Apply the lipstick on the skin for 10min and observe all the formulation. The result showing no skin irritation was observed.

5.2 PHYSICAL EVALUATION:

FORMULATION	FORCE ON APPLICATION	SURFACE ANOMALIES	SOLUBILITY	AGING STABILITY
F1	Good	No	Methanol	Smooth
F2	Good	No	Methanol	Smooth
F3	Good	No	Methanol	Smooth
F4	Good	No	Methanol	Smooth
F5	Good	No	Methanol	Smooth
F6	Good	No	Methanol	Smooth
F7	Good	No	Methanol	Smooth
F8	Good	No	Methanol	Smooth
F9	Good	No	Methanol	Smooth
F10	Good	No	Methanol	Smooth

Table No : 5 Physical Evaluation

For surface anomalies test, no fungi and crystallization were detected in the surface of lipsticks. The formulation herbal lipstick was dissolved in various solvents to observed. Methanol is good solubility compare to other solvent.

The force of application formulated lipsticks was evaluated and the result it was found accept all the formulation. The aging stability formulated lipsticks was evaluated and the result it was not found like bleeding, streaking, catering, and blooming were observed.

5.3 ACCEPTANCE (FEED BACK DATA):

Formulations	Marks awarded (out of 10)				Name	Year
	Colour	Odour	Shape	Consistency		
F1 Chocolate Yellow Ivory	9	9	10	9	S. Sandhiya	Final year B.Pharm
F2 Light Peach Shimmer	8	8	9	9	V. Ramya	Final year B.Pharm
F3 Red White	9	9	9	9	B. Rohini	Final year B.Pharm
F4 Cherry Red	9	9	10	10	R. Reshma	Final year B.Pharm
F5 Light Coral	8	8	8	8	M.R Charu Latha	Third year B.Pharm
F6 Pastel Yellow	8	7	8	8	G. Hari Priya	Third year B.Pharm
F7 Blueberry Pie	8	9	8	8	K.V. KalaiEzhil	Third year B.Pharm
F8 Smokey Violet	9	9	9	9	K. Shakthi	Second year B.Pharm

F9 Ice Age Grey	9	9	9	8	S. Yamuna Devi	Second year B.Pharm
F10 Jade Green	9	9	9	9	M. Ayesha Siddikha	First year B.Pharm

Table No : 6 Acceptance Data Report

The acceptance data report of formulated lipstick was evaluated and results indicates that highest mark was calculated out of 10 marks. (Colour = F1, F3, F4, F8, F9, F10 Odour = F1, F3, F4, F7, F8, F9, F10 Shape = F1, F4, Consistency = F4) Compare to all the formulation F4 get highest mark.

DISCUSSION:

The present work formulation and evaluation of herbal lipsticks was aimed to formulate a lipstick using herbal pigments with a hope to minimize the side effects as produced by the available synthetic ones. The prepared formulation (Table 2 & 3) was evaluated (Table 4, 5 & 6) and it was found that the herbal lipstick, was best among the ten formulations. Hence, from present investigation it was concluded that this formulated herbal lipsticks has better option to women with minimal side effects though a detailed clinical trials may be done to access the formulation for better efficacy.

To overcome the adverse effects of the synthetic lipsticks, these natural lipsticks were prepared by formulas. In order to improve the consistency and colour of the formulation various attempts were made. The main problem encountered was the precipitation of coloured pigment dry form also by changing the formula of the preparation. Different formulations were prepared so as to optimize the drawback which was seen in the previous formulation.

6 CONCLUSION:

The prepared formulation was evaluated and it was found that the lipstick, was best among the ten formulations. Hence, from present investigation it was concluded that this formulated lipsticks has better option to women with minimal side effects though a detailed clinical trials may be done to access the formulation for better efficacy. All the formulation are guidelines limited.

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