

Study of Different Biocolours and Its Application in Cosmetic Products

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Abstract: Colour is an important parameter for consumer preference. Objective of adding colour is to make them appealing augment the loss of colour during processing to improve quantity. Cosmetic industry is not an exception to it. Consumer attracts towards colorful products. Mostly synthetic colours are used in food, cosmetic products. These colours could be harmful for health of a consumer. These synthetic colours based on toxic raw materials. The effluents from the industry are one of the major causes of environment pollution. Therefore in today's progressive world a shift from synthetic to biocolours is observed. These biocolours produced from beetroot, spinach, turmeric etc. and dried under suitable conditions. The present article throws light on how synthetic colour could be replaced with biocolour in nail polish, lipbalm etc.

Keywords: Biocolour, synthetic colour, Drying, Nail polish, Lipbalm

1. Introduction

Cosmetic plays a significant role in today's life style. Moreover current trend is going green in almost all industries including cosmetics to adopt more natural way of life. The preferable choices are natural food, herbal medicines and natural curing practices for healthy life and also there is much demand for the organic vegetable products. "Biocolour consist of two words bio means natural & colour means which is used for colouring purpose. Biocolour is colour obtained from vegetable, insects, plants, fruits etc. Colour irrespective the form has been added to our food from centuries. Saffron, turmeric, paprika etc. were used as traditional colourants. The use of colourants in cosmetics can be traced to the early Egyptian transcripts. Other natural colours such as carrots, poemgranates, grapes, beetroot, spinach, flowers were used as colourig agents. Colours derived from beet, spinach, turmeric etc. Beet is a rich source of betalain pigment. Which is used in food, cosmetic, drug in the form beet juice or powder. Spinach is a natural green colourant used in cosmetic, food products. Turmeric is very popular in cosmetic use. 3, 11

Following steps involved in producing powder.

- 1) Raw material selection
- 2) Washing of raw material
- 3) Cut in to small pieces
- 4) Keep in oven at 100°C for 7-8 hrs
- 5) Totally dried
- 6) Grind
- 7) Filter then got fine powder



Figure 1: Beetroot powder



Figure 2: Spinach powder

2. Nail polish preparation

Nail polish is a lacquer that can be applied to the human fingernails decorate and protect the nail plates. Nail polish is sometimes referred as nail enamel. Nail polish is consist of film forming system dissolved in volatile solvent. Phase and film is formed by volatile solvent phase. No chemical reaction takes place during film formation. Materials required for nail polish are Nitrocellulose is a film forming polymer. It is also called as gun cotton. Resin, normal butyl acetate, normal butyl alcohol are solvents, natural colours.

3. Lip balm preparation

Lip balm or lip salve is a wax like substance applied to the lips of the mouth to moisturize and relieve chapped or dry or cold sores. Dry air, cold temperature all have drying effect on skin. Primary use of lip balm is to protect lips from external exposure. . Materials required for lip balm are Beeswax, Glycerin, castor oil, Vitamin E acetate, Colour etc.

4. Experimentation

4.1 Test for nail polish

4.1.1 Drying time

Apparatus- Stop watch Apply the material on the nail of the thumb with the help of nail polish brush in usual manner. Start the stop watch touch the film with the finger at frequent intervals when the film feels dry on touch, stop the watch and note the time. The time recorded is taken as drying time of material.

4.1.2 Determination of nonvolatile matter

Apparatus – petri dish

Weigh accurately 1gm of the material in the petri dish and place it in an oven at 105 °C for one hour cool to room temperature and weigh the dish.

Calculation

Non volatile matter percent by mass = $(M_2 - M_1) / M \times 100$

M - Mass in gm of material taken

M₁ - Mass in gm of dry and empty petri dish

M₂ – Mass in gm of petri dish and dried material

4.1.3 Blush test

Apparatus - Tin plate 5 * 15 cm Beaker 250 ml capacity Pour nail polish over plate and allow it to spread in to uniform film. Drain the excess dry the plate over 24 hours at ambient conditions. A beaker to half its level with ordinary tap water. Dip the plate in the water in the beaker such that half the coating is in the water and remaining portions above water. Let it stand for four hours remove the plate dry this with tissue paper. Allow it further dry at ambient conditions for four hours. Check for blush.

4.1.4 Viscosity check

Using fall cup viscosity meter. Fill the cup with nail polish then start the stop watch. When all nail polish fall in beaker that time stop the stop watch and note the time required.

5. Test for lip balm

5.1 Rancidity

Reagent concentrated hydrochloric acid Phloroglucinol solution (Benzene) Shake 10gm of material melted if

necessary in 10 ml concentrated hydrochloric acid 10 ml of phloroglucinol solution. Shake for 1 min. Material shall be taken to have passed the test if no pink colour develops.

5.2 Stability test

Place 50 gm of material in the beaker under ultra violet lamp & expose it for 6 hours. If it does not deteriorate after the exposure period. The product shall be taken to have passed.

6. Results and Discussion

Table 1: pH of colours

Beetroot powder	pH 4.5
Spinach powder	pH 5.62
Turmeric powder	pH 7.52

Table 2

Test name for nail polish	Beetroot colour	Spinach	Turmeric
Drying time	2mi 5 sec	1 min 45 sec	2min 17 sec
Non volatile matter	$(42.80 - 42.50) / (1.07 \times 10) \times 100$ 26.16%	$(40.50 - 40.20) / (1.04 \times 10) \times 100$ 28.84%	$(38.10 - 37.84) / (1.02 \times 10) \times 100$ 25.49%
Blush test	No blush or slight whitishness & film does not show any peeled off	No blush or slight whitishness & film does not show any peeled off	No blush or slight whitishness & film does not show any peeled off
Viscosity check	3min 4sec	2min 50sec	3min 10sec

Table 3

Test for lip balm	Beetroot	Spinach
Rancidity	No pink colour develop. pass the test	No pink colour develop. pass the test
Stability	Product does not deteriorate	Product does not deteriorate

7. Conclusion

In this experiment biocolours produced from beetroot, spinach, turmeric etc. Few synthetic colours in nail polish replaced by biocolours that are produced from beetroot, spinach, turmeric etc. Results found that colours are lighter in shade but increase the value of product because of use of natural colours. In lip balm also instead of synthetic colours natural colours are used. Natural colours has no any harmful effect on lips.

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