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**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.996004>Available online at: <http://www.iajps.com>**Research Article****FORMULATION AND EVALUATION OF LIPSTICKS
CONTAINING NATURAL INGREDIENTS****Gouri Kumar Dash***, Nur Anis Amira Mohd Anas and Shahnaz MajeedFaculty of Pharmacy and Health Sciences, Universiti Kuala Lumpur Royal College of
Medicine Perak, 30450 Ipoh, Malaysia**Abstract:**

The use of lipsticks has gained considerable importance in recent years and several cosmetic industries have geared up their marketing with different shades of colors to meet the demands of women. Many lipsticks often contain synthetic chemicals that are known to cause serious side effects upon prolonged use. In the present study, we have made an attempt to formulate lipsticks that contained only natural ingredients using extracts of the flowers of Hibiscus rosa-sinensis, juice of the roots of Beta vulgaris and mica powder as colourants. Four different formulations (AA-1, AA-2, AA-3 and AA-4) were prepared and evaluated. Among the prepared lipsticks, formulations AA-1 and AA-4 revealed ideal characteristics of lipsticks with 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.

Key words: Lipsticks, Hibiscus rosa-sinensis, Beta vulgaris, Mica powder, Formulation, Evaluation**Corresponding Author:****Dr. Gouri Kumar Dash,**

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INTRODUCTION:

The use of cosmetics has constituted a part of our daily life since the dawn of civilization as it offers perceptual experience of beautification and satisfaction. There is a considerable demand of cosmetics in recent a year which has led to a rise in the establishment various cosmetic industries that produce a wide range of cosmetic products for the care and beautification. However, such products often contain harmful chemicals that are sometimes toxic to the human body. Further, since the cosmetics are used on a daily basis, presence of such chemicals may cause cumulative effect upon regular use. In recent years, presence of heavy metals in some cosmetics has been identified and posed a serious concern to the consumers. This has led to a gradual shift among the consumers from chemical-based beauty products to products containing natural ingredients.

Lipsticks are one of the cosmetic products that primarily contain oils, waxes, emollients and pigments that are applied to the lips for colour, texture and protection to the lips. The pigments often used in lipsticks are synthetic chemicals which sometimes become a source of heavy metals. The amount of these heavy metals may be quite small, but their presence in the cosmetic formulation can lead to hazardous conditions because the heavy metals are absorbed through the skin and raises concerns about the safety of a cosmetic product. The problem gets intensified further when women apply lipsticks several times a day and continue for the whole lifetime where the exposure to lead and other heavy metals add up and can potentially affect their health on long run. A study conducted by Zakaria and Ho [1] found that there was significant difference of lead content in the lipsticks of different price categories sold in Malaysian market. In another study, Ziarati et al. [2] reported the heavy metal concentration in certain brands of lipstick products sold at local markets in Tehran. There was significant difference in the levels of lead in the entire four main color

groups analyzed. The pink color had highest concentration of lead, while violet color has the lowest lead content and the brown and orange color had the highest and lowest concentration of cadmium respectively. Studies carried out in other developing countries have also detected lead and cadmium in some lipstick samples [3].

In the light of the above and considering 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 included extracts of the flowers of *Hibiscus rosa-sinensis* L. (Malvaceae), juice of the roots of *Beta vulgaris* L. (Amaranthaceae) and mica powder as colourants. Extract of pericarp of *Sapindus mukorossi* Gaertn. (Sapindaceae) served as surfactant.

MATERIALS AND METHODS

Fresh flowers of *H. rosa-sinensis* were collected from the gardens of Taman Herba, Perak and authenticated by the botanists. Pericarp of *S. mukorossi* and roots of *B. vulgaris* were obtained from local markets while mica powder was procured from the suppliers. All other ingredients were taken from the institutional chemical store.

Extraction

Dried pericarp of *S. mukorossi* (55 g) was defatted with petroleum ether and extracted with ethanol-water (7:3) by maceration for 72 h. The flowers of *H. rosa-sinensis* were extracted with methanol by maceration for 72 h. The juice from the fresh roots of *B. vulgaris* were collected by grinding followed by filtration. Following extraction and filtration, the liquid extracts were concentrated under reduced pressure which yielded dried residues of the extracts. The dried extracts were then stored in a refrigerator until further use.

Formulation

Four different lipstick formulations (AA-1, AA-2, AA-3 and AA-4) were prepared based on a previously referred method [4] using varying proportions of the selected ingredients (Fig.1).



Fig. 1: Formulated Lipsticks

Evaluation

The formulated lipsticks were subjected to various quality control tests in order to evaluate their qualities [5]. The results of the study are presented in Table 2.

Physical appearance

The lipsticks were evaluated for colour and uniformity of colour distribution.

Melting point

The melting point of lipsticks was determined by capillary tube method. Approximate temperature of melting was noted.

Breaking point

Breaking point was determined to access the strength of the lipsticks. The lipsticks were separately held horizontally in a socket about half inch away from the edge of support. Gradual increasing weights (10 gm every time successively) at specific interval of 30 sec was loaded until the lipsticks broke. The final weight at which the lipstick broke was considered as the breaking point.

Surface anomalies

A surface anomaly was observed from the surface defects if any, such as absence of crystal formation

on the surfaces or contamination by moulds, fungi etc.

Aging stability

The lipsticks were stored at 40 °C for 1 h. Different parameters such as bleeding and ease of application were noted.

Solubility test

The formulated lipsticks were dissolved in different solvents to observe their solubility.

Skin irritation test

The lipsticks were applied to the skin surface and allowed to remain for 10 min.

Perfume stability

The formulated herbal lipsticks were tested after 30 days, to record fragrance.

RESULTS AND DISCUSSION

Four different lipstick formulations (AA-1, AA-2, AA-3 and AA-4) were prepared using varying proportions of the selected ingredients. The proportion of different ingredients used is presented in Table 1.

Table 1: Formulation of Natural lipsticks

Ingredients	Formulation			
	AA-1	AA-2	AA-3	AA-4
Bees wax	2 parts	2 parts	2 parts	2 parts
Carnauba wax	0.2 part	0.2 part	0.2 part	0.2 part
Cocoa butter	2 parts	2 parts	2 parts	2 parts
Castor oil	1 part	1 part	1 part	1 part
<i>S. mukorossi</i> extract	-	1 part	1 part	1 part
<i>Beta vulgaris</i> extract	-	q.s	-	q.s
<i>H. rosa-sinensis</i> extract	-	-	q.s	-
Mica powder	q.s	-	-	q.s
Lemon oil	q.s	q.s	q.s	q.s

The formulated lipsticks were evaluated for colour, breaking point, melting point, surface anomalies, ease of application, aging stability, solubility and skin irritation test using recommended procedures. The results of the study are presented in Table 2.

Table 2: Evaluation of Lipsticks

Parameters	Formulation			
	AA-1	AA-2	AA-3	AA-4
Colour	Red	Purple	Purple	Red
Melting point (°C)	70 – 80	70 - 80	70 – 80	70 – 80
Breaking point (gm)	120	120	120	120
Surface anomalies	No defect	No defect	No defect	No defect
Ease of application	Good	Good	Good	Poor
Aging stability	Good (Smooth)	Poor (Pigmentation)	Smooth (Pigmentation)	Good (Smooth)
Solubility test	Chloroform	Chloroform	Chloroform	Chloroform
Skin irritation test	No irritation	No irritation	No irritation	No irritation
Perfume stability	Good	Good	Good	Good

Among all the prepared formulations, it was observed that the formulations AA-1 and AA-4 were good enough to meet the general characteristics for ideal lipsticks. However formulations AA-2 and AA-3 showed poor pigmentation after application. The reason for such observation may be due to use of polar solvents during extraction of the colouring matters from the plant sources. The formulation AA-1 contained mica powder in very fine form and it was evenly distributed in the lipstick base. Formulation AA-4 contained mica powder along with beet root extract was also smooth enough and complied to the requirements of lipsticks.

CONCLUSION:

The present study offers new prototype 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 otherwise used in synthetic lipsticks. The prepared lipstick formulations AA-1 and AA-4 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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