



**International Journal of Biology, Pharmacy  
and Allied Sciences (IJBPAS)**  
*'A Bridge Between Laboratory and Reader'*

[www.ijbpas.com](http://www.ijbpas.com)

---

---

**FORMULATION OF HERBAL LIPSTICK USING FRUIT PIGMENTS FROM  
THE DRAGON FRUIT (HALCEREUS POLYRHIZUS), BEETROOT ROOT  
(BETA VULGARIS) AND LEMON FRUIT (CITRUS LIMON)**

**BHATT F\*, PANCHAL J, SHARMA K, SOLANKI T AND THORAT R**

Department of Pharmacy, Sumandeep Vidhyapeeth Deemed to be University, Vadodara,  
Gujarat, India

\*Corresponding Author: Ms. Foram Bhatt: E Mail: [forbhatt2103@gmail.com](mailto:forbhatt2103@gmail.com)

Received 28<sup>th</sup> Jan. 2025; Revised 28<sup>th</sup> March 2025; Accepted 27<sup>th</sup> May 2025; Available online 1<sup>st</sup> April 2026

<https://doi.org/10.31032/IJBPAS/2026/15.4.10083>

**ABSTRACT**

A product that is used often by human civilization without consideration for its negative effects is cosmetics. Today, women use a lot of synthetic cosmetics, which can have harmful effects on their skin and overall health. Herbal cosmetics are an alternate option that may be used to prevent skin ageing. In this study, we propose a herbal lipstick recipe made using a few key medicinal herbs for the pigment. Here, we've chosen raw materials like lemon fruit (Citrus limon), dragon fruit (Halcereus polyrhizus), beetroot root (Beta vulgaris), and some other elements for essence and flavour. This plant material is used to make herbal lipsticks in various concentrations, including 10.81, 19.51, 26.66, 24.48, 37.73, and 42.10%. With regard to assessing the herbal lipstick, several parameters, including colour, pH, melting point, surface anomalies, stability against ageing, stability against perfumes, and skin irritability, etc. These factors led to the conclusion that the herbal lipstick had the greatest local effect on the lips and had little to no negative effects.

**Keywords: Herbal lipstick, Formulation and Evaluation, Dragon fruit, Beet, Citrus**

## Graphical Abstract-



Figure 1: Graphical abstract of formulation

## INTRODUCTION-

One of the products that human civilization uses the most is cosmetics. Numerous cosmetic products, including skincare creams, lotions, powders, perfumes, lipsticks, finger- and toe-nail polish, eye and facial makeup, permanent waves, coloured contact lenses, hair colours, hair sprays, and gels, deodorants, baby products, bath oils, bubble baths, bath salts, and butters, are in high demand in both developed and developing nations. The usage of cosmetics is growing today [1, 2]. The makeup known as lipstick is used to highlight the attractiveness of the lips and give glitz to the face. If it is a chemical lipstick, its negative effects on our lips might be seen as its use increases. It included toxic substance has negative effects on the skin. By using herbal lipstick that is prepared from plant components, the adverse effects can be

prevented. All types of skin can use natural cosmetics [3, 4]. It may be used on skin of any colour, whether it be light, dark, or black, thus we had to pick herbal cosmetics like foundation, eye shadow, skin tone, and lipstick. The main advantage of using herbal cosmetics is that there is no need to worry about skin deterioration because very little chemical is used in the manufacture of the herbal formulation. Many of the chemical cosmetics used today include coal tar-like substances that have a negative influence on human health and can fuel the development of carcinogens. mostly a coal-tar-like material, which can lead to problems including cancer. There is a growing trend for vegetable products grown through biological/organic farming without the use of synthetic fertilisers and pesticides [5-8]. This practise was started to reduce chemical

exposure, adopt a natural way of life, and use herbal products instead of chemical ones. Cola tars, which are used to make synthetic lipstick colour, are harmful to people when consumed and can have negative effects including allergies, dermatitis, skin discoloration, drying of the lips, etc. [9]. When cosmetics now provide synthetic and chemical ingredients at sky-high rewards Herbal cosmetics provide the quality of natural alternatives along with a number of negative consequences with its herbal goods [10, 11]. Recently, a large variety of cosmetic formulations based on Indian herbs have been created. In addition to their historically noted uses, Indian herbs have also been tested in certain recent personal care product experiments. Due to their skin friendliness and absence of negative side effects, herbal treatments are becoming more and more popular. The nicest part about herbal cosmetics is that they are completely created from herbs and shrubs and have no negative side effects. The natural components in herbs have no negative impact on the human body and instead provide it what it needs with vitamins, minerals, and other beneficial elements [12, 13]. The achiote trees that grow in the tropics of the Americas are the source of annatto, also known as roucou. It is frequently employed as a flavouring and to create a red culinary colouring. Its flavour is characterised as "slightly sweet and

peppery," with a "slightly peppery with a hint of nutmeg" fragrance. It is frequently used as a flavouring and colouring component in Latin American and Caribbean dishes. Natives of Central and South America produce body paint, lipstick, and other cosmetics from the seeds.

Because of this, the achiote is also known as the "lipstick tree" [12]. Herbal cosmetics are becoming more popular than synthetic ones. Literature is in high demand a priceless gift from nature that is sold on the international market and is described in Ayurveda, particularly Charak Sanhita [11].

There are herbal lipstick formulations available, including one made from papaya that is efficient and has few negative effects [2, 4].

There is literature available that demonstrates how many natural colours satisfy culinary and cosmetic colouring requirements. Different pigments, such as carotenoid and anthocyanin, are usually used to create the colours that are taken from plants and are safe for human consumption. Due to the fact that carotenoid and anthocyanin pigments provide colour and have a variety of functional properties, including antioxidant and anti-inflammatory Plant pigments have been used for ages to colour food and cosmetics, including curcumin, beetroot anthocyanins, carotenoids from peppers and saffron, and chlorophyll from green leaves [14-17].

Numerous studies on the usage of different vegetable oils in human anatomy are available. It has been proven that the oil from the dragon fruit (*Hylocereus polyrhizus*) was extracted for use in natural lipstick formulations. Asians have referred to this fruit as "dragon fruit" because of its vivid red exterior and green, overlapping pins that adorn it [11]. Natural pigment lipstick was created utilising betalain pigment obtained from the *Hylocereus polyrhizus*, and its potential for antibacterial and antioxidant activity, as well as its organoleptic qualities (spreading, hardness, shine, and gloss), were all assessed [9]. *Hylocereus* A member of the Cactaceae family is *polyrhizus*. In several Asian nations, it has grown in popularity [10]. In various Asian nations, including Malaysia, Vietnam, and the Philippines, commercial pitaya cultivation is growing [7]. *Bet alanis* is a naturally occurring colouring agent found in dragon fruit. The betacyanins (red-violet) and betaxanthins (yellow) are two examples of betalains, a class of natural pigments [18]. Plants that grow beets (*Beta vulgaris*) are members of the Dicot family Amaranthaceae. It is known that beetroot root is used to make the natural dye known as beetroot root dye. Beetroot root is used to

make betaine. Due to the dye's formation of the deep red-purple colour, there are several possible alternate hues, including golden yellow and red and white stripy [19]. One significant plant in the Rutaceae family is citrus limon.

#### MATERIAL AND METHOD:

To make the herbal lipstick, pigment that has been derived from plants and plant components is used [20, 21]. The choice of plant is made based on the presence of pigment and the colour it contains in order to be employed in the creation of lipstick. Using the plants and plant components from **Table 1**: Plant components included in the composition, including citrus fruit, beat roots, and dragon fruit Along with this raw material, we also need some of the ingredients listed in **Table 2**. Utilisation of ingredients during formulation and usage that are Bees Wax is utilised for shine and durability [21, 22]. Vanilla essence is used to provide gloss, White Soft Paraffin is used for blending, Acacia Gum is used as a surfactant, Vitamin is utilised as an anti-oxidant, and during the formulation, ingredients for preservation, lemon juice as an anti-oxidant, and fruit pigment from Beat & Dragon as the primary colouring agent are employed [14, 15].

Table 1: Plant part used for formulation

Sr no	Botanical name	Common name	Plant Part used	Source
1	<i>Hylocereus polyrhizus</i>	Dragon fruit	Fruit	Fruit Market Market of vadodara
2	<i>Beta vulgaris</i>	Beat	Root	Vegetable Market of vadodara
3	<i>Citrus limon</i>	Lemon fruit	Fruit	Fruit Market of vadodara

Table 2: Other ingredient and uses of it during formulation

Sr no	Excipient	Category Importance
1	Bees Wax	glossy and Hardness
2	White Soft Paraffin	glossiness
3	Coconut Oil	Blending
4	Acacia Gum	Surfactant
5	Vitamin	Anti- Oxidant
6	Vanilla essence	Preservation
7	Lemon Juice	Anti- oxidant
8	Fruit pigment of Beat & Dragon	Colouring Agent

Table 3: Concentration of fruit pigment.

Sr no	Excipient	Quantity
1	Bees Wax	7gm
2	White Soft Paraffin	3gm
3	Coconut Oil	3ml
4	Acacia Gum	2ml
5	Vitamin	0.5ml
6	Vanilla essence	1ml
7	Lemon Juice	1ml
8	Fruit pigment of Beat & Dragon	1ml

**Evaluation parameter:-****Color**

Colour is a crucial component when making herbal lipstick. After lipstick has been prepared, colour may be observed, and depending on the fruit's pigment, multiple colours can be seen [12].

**Melting Point:**

Knowing the melting point is crucial since it shows the substance's composition. Using a digital melting point device, the capillary tube method was used to determine the melting point of produced lipstick [12-15].

**Surface anomalies:**

This was investigated by looking at the surface flaws, such as no formation and no fungal infection. For the purpose of identifying adulteration and purity, surface examination is crucial [16].

**Aging stability:**

The lipstick was first kept at 40 °C for an hour in order to analyse this parameter. Numerous factors, including skin surface crystallisation and bleeding, were seen [17].

**pH parameter:**

The assessment of pH provides a clue as to a formulation's suitability for skin. The produced herbal lipstick's pH was measured using a digital pH metre, which is a crucial factor in determining a product's acidity and basicity.

**Skin irritation:**

The human animal model was used to conduct the skin irritancy test. The institutional animal ethical committee of Jeypore College of Pharmacy gave its approval to the study protocol. On top of the skin (lip), the prepared lipstick was applied. Any symptoms, such as itchiness, irritation, redness, etc., were noticed every ten minutes [18, 19].

**Perfume:**

The formulation of herbal lipstick was kept in a cold, normal storage environment. After 30 days, the aroma was evaluated [20].

**RESULT AND DISCUSSION:**

Synthetic cosmetics have become more widely used by society in recent years, mainly by women. When such cosmetics are used excessively, the damaging effects on the skin and health are evident [21].

Dragon fruit, beetroot root, citrus and other ingredients with their applications are included in our inquiry into the composition of the herbal lipstick. These ingredients are included in **Table 1** Ingredient and Their Uses. According to **Table 2-4**, which lists the various plant materials used in formulation and their corresponding concentrations (10.81, 19.51, 26.66, 24.48, 37.73, and 42.10 percent), this formulation is done with various concentrations utilising various plants. This lipstick formulation comes in various concentrations, as indicated in **Figure 2**. Lipstick is made using various fruit pigment concentrations.

Evaluation 6, Surface alterations There are no visible flaws on the surface, as far as we can see no signs of skin irritation were noticed. Their many lipstick characteristics are assessed, including Lipstick was crimson in colour. Lipstick was determined to have a pH of 6.5, which is in the pH range of skin [23].

It indicated that the lipstick would be suitable with lips, which a skin irritancy test later validated. Lipstick melted at a temperature between 60 and 61 °C. 2018 (Panda *et al*). It was claimed that a herbal lipstick formulation using papaya extract and raw herbal ingredients had several parameters evaluated. Based on the fact that the product has a pH of 6.5+0.12 and a melting point of 60–61oC Given the information, it can be determined that there are very few or no negative effects associated with using natural colourants in lipstick composition. After extensive clinical testing, the produced lipstick may thus be used safely and effectively [20-22].

**Table 4: Evaluation of Lipstick Parameter**

Sr no	parameters	F1	F2	F3	F4	F5	F6
1	Colour	White Pale	Pink Pale	Pink Pale	Pink Pale	Deepred Pink	Pinkish Red
2	Melting point	55-60	55-60	55-60	55-60	55-60	55-60
3	Surface Anomalies	No Defect	No Defect	No Defect	No Defect	No Defect	No Defect
4	Ease of application	Good	Good	Good	Good	Good	Good
5	Aging Stability	Smooth	Smooth	Smooth	Smooth	Smooth	Smooth
6	pH	6	6	6	6	6	6
7	Perfume stability	+	+	+	+	+	+
8	Skin irritation	No	No	No	No	No	No



Figure 2: Batch of lipsticks

### CONCLUSION:

The results of studies on the creation and assessment of herbal lipstick show that it has less negative effects on the skin [31]. The current study demonstrates that both beetroot and dragon are colouring agents, and the created lipstick exhibits outstanding qualities like spreading and spreading shine as well as smoothness of lips. The study's findings also offer recommendations for how components could affect the physical properties and consumer acceptance of lipstick Formulation [30-31].

### REFERENCES:

- [1] Aher, A. A., Bairagi, S. M., Kadaskar, P. T., Desai, S. S., & Nimase, P. K. (2012). Formulation and evaluation of herbal lipstick from colour pigments of *Bixa Orellana* (Bixaceae) seeds. *International Journal of Pharmacy and Pharmaceutical Sciences*, 4(5), 357-359.
- [2] Azwanida, N. N., Normasarah, N., & Afandi, A. (2014). Utilization and evaluation of betalain pigment from Red dragon fruit (*Hylocereus polyrhizus*) as a natural colorant for lipstick. *Jurnal Teknologi*, 69
- [3] Bhagwat, D. A., Patil, N. D., Patel, G. S., Killedar, S. G., & More, H. N. (2017). Formulation and evaluation of herbal lipstick using lycopene extracted from *Solanum lycopersicum* L. *Research Journal of Pharmacy and Technology*, 10(4), 1060-1064.
- [4] Chaudhari, N. P., Chaudhari, N. U., Chaudhari, H. A., Premchandani, L. A., Dhankani, A. R., & Pawar, S. P. (2018). A Review on Herbal Lipstick from Different Natural Colouring Pigment. *Indian Journal of Drugs*, 6(3), 174-179.
- [5] Chowdhury, A. I., Molla, A. I., Sarker, M., Rana, A. A., Ray, S. K., Nur, H. P., & Karim, M. M. (2006). Preparation of

- edible grade dye and pigments from natural source *Bixa orellanae* linn. Int J Basic Appl Sci, 10(4), 7-22.
- [6] Nuha Rasheed, Syed Abdul Rahman, Samreen Hafsa. Formulation and Evaluation of Herbal Lipsticks, *Research J. Pharm. and Tech.* 2020; 13(4): 1693-1700.
- [7] Dhakal, M., Sharma, P., Ghosh, S., Paul, B., Bhutia, S., & Pal, P. (2016). Preparation and Evaluation Of Herbal Lipsticks Using Natural Pigment Lycopene (*Solanum lycopersicum*). Universal Journal of Pharmaceutical Sciences and Research, 2(2), 23-29.
- [8] Dwivedi, S., Dwivedi, S. N., & Patel, P. C. (2009). Formulation evaluation and antimicrobial activity of herbal lipstick. Recent Adv in Prosp and Potent of Medicinal Plants, 4(1), 39-43.
- [9] Gediya, S. K., Mistry, R. B., Patel, U. K., Blessy, M., & Jain, H. N. (2011). Herbal plants: used as a cosmetics. J Nat Prod Plant Resour, 1(1), 24-32.
- [10] Joshi, L. S., & Pawar, H. A. (2015). Herbal cosmetics and cosmeceuticals: An overview. Nat Prod Chem Res, 3(2), 170.
- [11] Kadian, S. S., & Sharma, A. (2013). Stability and application of crude beetroot extracts in different food products. International Journal of Biology, Pharmacy and Allied Sciences, 2(3), 693-698.
- [12] Kamairudin, N., Gani, S. S. A., Masoumi, H. R. F., & Hashim, P. (2014). Optimization of natural lipstick formulation based on pitaya (*Hylocereus polyrhizus*) seed oil using D-optimal mixture experimental design. Molecules, 19(10), 16672-16683.
- [13] Kapoor V.P. Herbal cosmetics for Skin and Hair care, Natural Product Radiance: 2005; 4(4); p. 306- 314.
- [14] Mishra, P., & Dwivedi, S. (2012). Formulation and evaluation of lipstick containing herbal ingredients. Asian Journal of Medical and Pharmaceutical Researches, 2(3), 58-60.
- [15] Mizrahi, Y., Nerd, A., & Nobel, P. S. (1997). Cacti as crops. Hort. Rev, 18, 291-320.
- [16] Naderi, N., Ghazali, H. M., Hussin, A. S. M., Amid, M., & Manap, M. Y. A. (2012). Characterization and quantification of dragon fruit (*Hylocereus polyrhizus*) betacyanin pigments extracted by two procedures.
- [17] Pertanika J. Trop. Agric. Sci, 35(1), 33-40. Panda, S., Dalapati, N., & Kar, P. K. (2018). Preparation and evaluation of Herbal Lipstick. environment, 5, 6.
- [18] Acharya Deepak, Shrivastava Anshu, Indigenous herbal medicine, Tribal formulation and traditional herbal practices, Avishkar Publisher Distributor, Jaipur, India , 2008:421.

- 
- [19] Sainath, M., Kumar, K. S., & Babu, K. A. (2016). Formulation and evaluation of herbal lipstick. International Journal Of Advanced Research In Medical & Pharmaceutical Sciences (IJARMPS), 1(1).
- [20] Sunil, R., Shekhar, T. C., & Ashutosh, B. (2013). Formulation and evaluation of a herbal lipstick: A new approach. International Journal of Pharmaceutical Erudition, 3(1), 26-30.
- [21] Tan, Y. L. (2020). Preparation Of Lipstick with Red Dragon Fruit (*Holycereus Polyrhizus*) Pigment And Storage Stability Study (Doctoral dissertation, UTAR).
- [22] Verma, S., Tripathi, D., & Tiwari, R. K. Formulation and Evaluation of Natural Lipsticks Prepared from *Bixa Orellana* Seeds and *Daucus Carota* Root Extract and their Comparative Study. J Pharm Sci. 2017. 7(1): 131-135.