



## Physicochemical Evaluation of Herbal Ingredients and their Benefit on Lipstick Formulation: A Review

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### ABSTRACT

Significant progress has been made in the discovery and implementation of novel, effective delivery systems for cosmeceuticals and cosmetics. Because herbal products are becoming more and more popular, a wider range of color tones, textures, and gloss variations are now accessible. Data from several researches were gathered to evaluate herbal lipstick that uses herbal ingredients in an effort to lessen any potential harmful effects produced by synthetic substances.

Herbs are more productive and effective than other synthetic and artificial products. It was shown that the formulation of herbal lipstick was better and had fewer negative effects. This paper aims to identify the ingredients used on lipstick formulation and to determine their impact on the formulation.

**Keywords:** Herbal Lipstick, Herbal Ingredients, Lipstick Formulation

### Introduction

The development and integration of fresh, efficient delivery mechanisms in cosmetics and cosmeceuticals has advanced significantly. The characteristics of a product's delivery vehicle greatly impact patients' acceptance of the product and compliance. Numerous vehicles not only provide the product an aesthetically pleasing and pleasant feel, but also stabilize and protect the active component, making application and compliance easier. More unique vehicles and delivery systems are being investigated for possible topical usage as a result of the rise in global consumer needs and expectations as well as the amount of money spent on cosmetic products. Due to their numerous advantageous features, including as their usage as sunscreen, anti-aging agents, moisturizers, antioxidants, anticellulite agents, and antimicrobials, herbs and spices have been utilized to maintain and improve human attractiveness. In addition, herbal cosmetics have a lower toxicity profile than synthetic cosmetics and are milder and biodegradable.

Humans have utilized herbs for thousands of years, but they do not deliver immediate cures; rather, they offer a means of restoring the body's harmony with nature. Herbs have traditionally been used in the following categories: to flavor food, as perfumes, as disinfectants, to keep us safe from pathogens, and as remedies for illnesses. Herbal cosmetic products are obtained by combining various cosmetic elements with one or more herbal ingredients to create a basis that offers the required cosmetic beneficial properties. Herbal cosmetics are suggested over synthetic ones since they have minimal side effects, can increase patient satisfaction, and can even improve health. Moreover, herbal colors used in the formulation are non-toxic, contain antioxidant, anti-inflammatory and antimicrobial properties, and are used in leucoderma, particularly the lips.

Lipstick is a cosmetic product that is used on the lips to color and protects them from the external environment. Formulation is used to protect the lips from sun damage and pollution while also improving the appearance of the lips. Nowadays, a broader variety of color tones, textures, and gloss options are available because of the growing popularity of herbal products. This is evident that the lipstick is sold in a wide range of shades to meet the current demand of women. When consumed, the lipstick's coloring agents are extremely toxic to humans. Since users typically nibble at lipstick, it is crucial that health inspectors evaluate the components in lipstick at a micro level. There have been allegations over the years claiming that lipstick contains harmful amounts of lead. In connection with this matter, there had been instances that it was found out that Lead was present in 61 percent of lipsticks, with concentrations reaching 0.65 parts per million. The U.S. Food and Drug Administration announced that they will investigate the matter. The FDA has tested for lead in hundreds of lipsticks and other cosmetic lip items, including lip glosses. In 2009, the FDA released the results of a follow-up inquiry, which showed that all tested samples of lipstick contained lead levels ranging from 0.09 to 3.06 ppm, which were four times higher than those found in the Campaign study. Consequently, a number of products uses herbal ingredients such as Coconut oil, Beeswax, Paraffin wax, Punicagranatum juice, Ginger Powder, Strawberry essence, Ripe fruit of Shikakai, Vanilla essence, Cocos nucifera, Zingiberofficinale, Citrus limon, Bixaorellana, Lemon juice, Beta vulgaris, Punicagranatum, Acacia concinna, Rosa rubiginosa, Crocus sativus and Bougainvillea spectabilis in the formulation of herbal lipsticks.

In this review, we focused on the herbal ingredients used to formulate lipstick and assess their effects. Lipstick is the cosmetic that is most usually used to make lips appear more attractive. Some lipsticks formulated with synthetic colors can irritate the skin and eyes and are harmful and carcinogenic. Many synthetic coloring pigments in cosmetics induce allergies and cancer that are now prohibited. The majority of synthetic dyes are non-biodegradable; they build up on land and rivers, posing ecological challenges. Hence, using herbal color extracts from various herbal sources help lessen the side effects. The herbal component helps maintain healthy lips. As opposed to synthetic cosmetics while herbal cosmetics are safe for human health.

## Methodology

The information and data searched and collected for this review focuses on herbal ingredients and their impact on lipstick formulation. This review made use of peer-reviewed articles and recent studies from various databases such as Google Scholar, ResearchGate, PubMed, SAGEJournals, ScienceDirect, JPAROnline, ProQuest and Wiley Online Library. The article search began on June 20, 2022 from which it focuses on the following: a) identifying different herbal ingredients used in lipstick formulation, b) usage of herbal ingredients in lipstick formulation, and c) impact of herbal ingredients in the formulation of a lipstick. The search utilized key terms that include herbal ingredients used in lipstick formulation, herbal lipstick formulation, and impact of herbal ingredients in lipstick formulation. The studies and journal articles collected and utilized for this review were from the year 2012 and beyond.

## Use of Natural Ingredients in Herbal Formulations

Herbal medications can be made from herbs, herbal ingredients, and preparation. Natural inorganic or organic active substances that are not derived from plants, such as animal and mineral materials, may be found in some herbal treatments according to local custom. The materials of crude plants such as seeds, leaves, fruit, flowers, roots, wood, or other parts of plants, whether broken up, whole, or powdered, are included in the category of herbs. Herbal preparations serve as the foundation for final herbal products and can comprise tinctures, extracts, powdered or comminuted herbal ingredients and herbal materials' fatty oils. They are created through physical or biological processes such extraction, fractionation, purification, concentration, and such. Additionally, they consist of concoctions created by heating or steeping herbal ingredients in alcoholic drinks, honey, or other substances. Finished herbal cosmetics are made up of natural formulations including mainly herbs. The phrase "mixed herbal product" may also be used if more than one herb is utilized. Excipients may also be present in finished herbal products and herbal blends in addition to the active components.

Currently, cosmetics made with herbal ingredients offer benefits of natural alternatives with their products than cosmetics that contain chemical and artificial ingredients at extremely high prices. Lipstick that has artificial colorants containing harmful chemicals, is extremely damaging to human skin which can cause problems such as allergy, dermatitis, nausea, and can make the lips dry or chapped, and in severe cases, it might cause cancer. Therefore, there has been an increase in the demand of cosmetics that contain herbal ingredients since it was said to be safe. Moreover, there are present studies regarding formulation of lipstick containing herbal ingredients.

**Table 1:** List of Herbal Ingredients in lipstick formulation and its benefits



Plants	Phytochemicals	Benefits
Cocos nucifera 	Flavonoids, phenols, leucoanthocyanidins, tannins, triterpenes, steroids, and alkaloids.	Moisturizing effects and is used to protect skin.
Zingiberofficinale 	Phenol and terpenes.	May provide protection against infections of bacteria, moisture and emollient action.

Image Source:

<https://www.plantgrower.org/coconut.html>

Image Source:

<https://www.britannica.com/plant/ginger>

Citrus limon



Flavonoids, alkaloids, phenols, terpenoids, quinines, and carbohydrates. Antioxidants, Fragrance Purifying and Astringent.

Image Source:

<https://www.emedihealth.com/nutrition/lemon-benefits>

Bixaorellana



Apocarotenoids and carotenoids.

Having lips that are smooth, spread out, and shiny.

Image Source:

<https://www.healthline.com/nutrition/annatto>

Beta vulgaris



Flavonoids, polyphenols, alkaloids, and tannins.

Create a smooth appearance and conceal any skin roughness.

Natural supply of nitrites

Image Source:

<https://www.britannica.com/topic/Beta-vulgaris>

Punicagranatum



Flavonoids, Betalains, and phenolic acids.

Reducing irritation and moisturizing and softening the lips.

Image Source:

<https://www.planetaryurveda.com/library/pomegranate-punica-granatum/>

Acacia concinna



Flavonoids, alkaloids, and Phenols.

Enhances the natural glow of skin and moisturized dry skin.

Image Source:

<https://www.indianherbalvalley.com/post/health-benefits-of-shikakai-powder>

Rosa rubiginosa



Anthocyanins and phenols.

Antioxidant.

Image Source:

<https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/rosa-rubiginosa>

Crocus sativus



Apocarotenoids, flavonoids, and saponin.

Anti-pigmentations, antioxidants, anti-aging and anti-solar properties.

Image Source:

<https://www.britannica.com/plant/saffron-crocus>

Bougainvillea spectabilis



Saponins, flavonoids, phlobatannins, cardiac glycosides, alkaloids, and terpenoids.

Antibacterial, antioxidant, and anti-inflammatory.

Image Source:

<https://plants.ces.ncsu.edu/plants/bougainvillea-spectabilis>

Herbal cosmetic products are the most recent fashion and beauty trends. They are made with various cosmetic ingredients and permitted materials to create a foundation from one or more herbs and deliver the needed cosmetic advantages. It is recommended that patients use herbal cosmetics to enhance their health and ensure patient satisfaction. They give the body nutrients, improve health, and bring satisfaction because they are free from synthetic chemicals. Most women today choose herbal cosmetic products rather than cosmetics that contain chemicals for their personal care.

A study by Mishra and Dwivedi provided data on the ingredients utilized in the formulation of herbal lipstick with their recommended quantity. The formulation as shown in table 2 was evaluated in table 3. It was discovered that among the formulations, F3 was best. Therefore, it was concluded that the result of the formulation of herbal lipsticks has better options for consumers, especially women, with little side effects.

**Table 2:** Prescribed quantity of ingredients utilized in the formulation of herbal lipstick by Mishra and Dwivedi

S/No.	Ingredients	Importance	Quantity (gm)				
			F1	F2	F3	F4	F5
1.	Niger oil	Blending properties	54	50	51	52	53
2.	Kokum butter	Glossy & hardness	15	16	13	13	14
3.	Bees wax	Glossy & hardness	12	13	14	12	11
4.	Ripe fruit of shikakai	Surfactant	6.5	7.5	8.5	9.5	8.0
5.	Turmeric powder	Coloring agent	10	11	12	11	10
6.	Strawberry essence	Flavoring agent	1.5	1.5	1.0	02	2.5
7.	Lemon juice	Anti-oxidant	01	01	0.5	0.5	0.5
8.	Vanilla essence	Preservative	q.s	q.s	q.s	q.s	q.s

**Table 3:** Physicochemical Evaluation of formulated herbal lipsticks by Mishra and Dwivedi

S/ No.	Evaluation parameter	Inference				
		F1	F2	F3	F4	F5
1.	Color	Brownish yellow	Brownish yellow	Brownish yellow	Brownish yellow	Brownish yellow
2.	pH	6.43±0.30	6.71±0.22	6.89±0.12	6.72±0.13	6.66±0.21
3.	Skin irritation test	No	No	No	No	No
4.	Melting point	60-61	61-63	59-62	60-61	63-63
5.	Breaking point	31	30	30	31	32
6.	Thixotropy character	9	10.2	10.5	9.8	9
7.	Force of application	Good	Good	Easy	Easy	Poor
8.	Perfume stability	+++	++	+	+++	++
9.	Surface anomalies	No defect	No defect	No defect	No defect	No defect
10.	Aging stability	Smooth	Smooth	Smooth	smooth	Smooth
11.	Solubility test	Chloroform	chloroform	chloroform	chloroform	chloroform

**Melting point:** The melting point must be determined because it indicates the safety of product storage. In general, an ideal preparation of lipstick should possess a melting point approximately 40°C to 55°C.

**Breaking point:** The breaking point is a test that can be used to determine the robustness of the lipstick. The weight is gradually increased by 10 gm every 30 seconds, and it will be considered as a breaking point on the weight which it will break.

**Thixotropic character:** A penetrometer is used to indicate thixotropic quality. A needle with a particular width is utilized to penetrate on a 50 gm load at approximately 25 degree Celsius for five seconds. The measurement of its thixotropic structure is the depth of penetration of lipstick.

**Force of application:** This test is used for comparing the force to be applied for application. Two lipsticks are cut and placed above the other. A smooth paper is placed in between and is attached to a dynamometer, which will then determine the force applied to pull the paper.

**Surface anomalies:** Defects on the surface, examples are the absence of crystal formation on surfaces and the absence of contamination by molds and fungi, are investigated. Inspection of surface anomalies is essential for the quality of product and expectations of consumers.

**Aging stability:** At 1 hour, the product was stored at 40 degrees Celsius. Some parameters should be observed including crystallization on the surface, bleeding, and ease of application.

**Solubility test:** To determine the solubility, herbal lipstick will be dissolved in several solvents.

**pH parameter:** pH meter was used in the determination of the formulation of herbal lipstick. The level of pH can alter the stability of the product, since it can affect the solubility of ingredients. A pH of 6.4 should be used as a standard value for pH test.

**Skin irritation test:** Application of the product on skin.

**Perfume stability:** To record the fragrance, the formulation will be tested after thirty days. The perfume should not cause irritation, tasteless, and should be compatible with other ingredients.

### Preparation and Evaluation of Herbal Lipstick Using Organic Edible Coloring Ingredients

Marketed lipsticks have hundreds of shades of colors to fit in the latest trend. However, the dyes that are used in the formulation of lipsticks are extremely harmful to human consumption. Currently, there are studies that test organic edible ingredients that can be used as coloring, that can be a better option for herbal lipstick preparation.

**Table 4:** Composition and importance of different ingredients utilized in the preparation of herbal lipsticks by Kothari, et. al.

Ingredients	Quantity taken	Importance of Ingredient
Bees wax	1 gm	Hard wax (Hardness)
Coconut oil	1.5 ml	Hard wax (Hardness)
Olive oil	1 ml	Soft wax (Glossy)
Castor oil	1 gm	Blending agent
Edible colouring matter like cinnamon bark powder, coca powder, turmeric powder	2 gm	Coloring agent
Vanilla essence	5-6 drops	Flavoring agent
Rose essence	3 drops	Flavoring agent
Lemon juice	2 ml	Anti-oxidant

**Table 5:** Physicochemical Evaluation of Herbal Lipsticks by Kothari, et. al.

Sr. No.	Parameter	Herbal Lipstick Formulation	Marketed Formulation	Standard Values
1.	Color	Wine Red	Red	-
2.	Texture	Smooth	Smooth	Smooth
3.	pH	6.3	6.6	6.4
4.	Melting point	60-64 C	62-64 C	60-66 C
5.	Breaking point	250 gm	140 gm	-
6.	Softening point	60 C	62 C	50-60 C
7.	Surface anomalies	No defects	No defects	No defects
8.	Aging stability	Smooth	Smooth	Smooth
9.	Perfume stability	+++	+++	+++

Another study by Kothari, et. al. provided data on table 4 on the preparation of herbal lipstick with regards to the composition and importance of different ingredients. By using a Ring and Ball method in which either a support orifice or a ring is utilized, and then an insertion of the herbal lipstick.

Table 5 shows the physicochemical evaluation of herbal lipstick with a result that indicates that the parameters of Herbal Lipstick show standard values. This was supported by a study with similar results by Bhagwat, et. al., whereas they extracted Lycopene from *Solanum lycopersicum* L. Based on the result, they concluded that in extracting the *Solanum lycopersicum* L, in which the Lycopene obtained is a better option than the synthetic coloring agents which may have various side effects. Therefore, people who will purchase this product can take safe and effective advantage after clinical trials.

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## Conclusion

Women's use of cosmetics has significantly increased during the past several decades. However, the risks posed by these compounds have just recently gained attention. Information from various studies were obtained to assess an herbal lipstick employing herbal compounds like Coconut (*Cocos nucifera*) oil, Paraffin wax, Beeswax, Ripe fruit of Shikakai (*Acacia concinna*), Punicagranatum juice, Ginger (*Zingiberofficinale*) Powder, Strawberry essence, Lemon (*Citrus limon*) juice, Vanilla essence, Bixaorellana, Beta vulgaris, Rosa rubiginosa, Crocus sativus and Bougainvillea spectabilis in an effort to reduce the negative effects that the available synthetic ones could cause. The assessment led to the conclusion that this herbal lipstick formulation offers women a better option with less side effects; however, in-depth clinical research may be carried out to examine the formulation for increased efficacy.

## References

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- Chanchal D, Swarnlata S. Novel approaches in Herbal Cosmetics. *Journal of Cosmetic Dermatology*. 2008;7(2):89–95.
- Bijauliya RK, Alok S, Kumar M, Chanchal DK, Yadav S. A COMPREHENSIVE REVIEW ON HERBAL COSMETICS. *International Journal of Pharmaceutical Sciences and Research*. 2017;8(12).
- Panda, S., Dalapati, N., Kar, P. Formulation and Evaluation of Herbal Lipstick [Internet]. *JPAR*. 2018 [cited 2022 Jun 29].
- Kruthika S, Ram SS, Ahmed SA, Sadiq S, Mallick SD, Sree TR. Formulation and Evaluation of Natural Lipstick from Coloured Pigments of Beta Vulgaris Taproot. *Research and Reviews* [Internet]. 2014. [cited 2022 July 11].
- Ralebhat V, Vikhe S. Preparation and Evaluation of Herbal Lipstick. *IJRASET* [Internet]. 2020. [cited 2022 July 11].
- Bijauliya, R., Alok, S., Kumar, M., Chanchal, D., Yadav, S. A Comprehensive Review On Herbal Cosmetics [Internet]. *IJPSR*. 2017 [cited 2022 Jun 29]
- Deepika P, Aditi G, KS R. Formulation and Evaluation of Herbal Lipstick from the Extract of Papaya. *International Journal of Pharmaceutical Sciences Review and Research* [Internet]. 2020. [cited 2022 July 11].
- Sunil, R., Shekhar, T., Ashutosh, B. Formulation and Evaluation of a Herbal Lipstick : A New Approach [Internet]. *Pharmaerudition*. 2013 [cited 2022 Jun 29].
- Lead in Lipstick [Internet]. *Safe Cosmetics*. *Safe Cosmetics*; [cited 2022 Jul 9].
- Lead in cosmetics [Internet]. U.S. Food and Drug Administration. FDA; 2022 [cited 2022 July 9].
- Jain, S., Padiyar, M., Birla, D., Mukherjee, J. and Sharma, V. 2018. Formulation and characterization of herbal lipstick using colored pigment of Punicagranatum. *PharmaTutor*. 6, 7 (Jun. 2018), 8-10. DOI:<https://doi.org/10.29161/PT.v6.i7.2018.8>
- Vadaga, A. A Review on Herbal lipsticks [Internet]. *ResearchGate*. 2021 [cited 2022 Jun 29].
- Rasheed, N., Rahman, S., Hafsa, S. Formulation and Evaluation of Herbal Lipstick [Internet]. *RJPT*. 2020 [cited 2022 Jun 29].
- Padiyar M, Jain SD, Birla D, Mukherjee J, Sharma V. Formulation and Characterization of Herbal Lipstick Using Colored Pigment of PunicaGranatum. *PharmaTutor* [Internet] 2018. [cited 2022 July 9].
- Dwivedi, S. Formulation, evaluation and antimicrobial activity of herbal lipstick. *CabDirect* [Internet] 2012. [cited 2022 July 3].
- Sherikar, A. Design, Development and Assessment of Herbal Lipstick from Natural Pigments [Internet]. *ResearchGate*. 2020 [cited 2022 Jun 29].
- Deepika P, Aditi G, KS R. Formulation and Evaluation of Herbal Lipstick from the Extract of Papaya. *International Journal of Pharmaceutical Sciences Review and Research* [Internet]. 2020. [cited 2022 July 11]
- Lima EB, Sousa CN, Meneses LN, Ximenes NC, Santos Júnior MA, Vasconcelos GS, Lima NB, Patrocínio MC, Macedo D, Vasconcelos SM. *Cocos nucifera* (L.) (Arecaceae): A phytochemical and pharmacological review. *Braz J Med Biol Res*. [Internet]. 2015. [cited 2022 July 3];48(11):953-64.
- How to Use Coconut Oil for Chapped, Dry Lips. *Healthline*. [Internet]. 2018. [cited 2022 July 3].
- Mao QQ, Xu XY, Cao SY, Gan RY, Corke H, Beta T, Li HB. Bioactive Compounds and Bioactivities of Ginger (*Zingiberofficinale* Roscoe). *Foods*. [Internet]. 2019. [cited 2022 July 3];8(6):185.
- Mawazi SM, AzreenRedzal NAB, Othman N, Alolayan SO. Lipsticks History, Formulations, and Production: A Narrative Review. *Cosmetics*. [Internet]. 2022. [cited 2022 July 3];9(1):25.

- Singh N, Jaiswal J, Tiwari P, Sharma B. Phytochemicals from Citrus Lemon Juice as Potential Antibacterial Agents. *The Open Bioactive Compounds Journal* [Internet]. 2020. [cited 2022 July 3].
- Lemon. L'Oréal Paris. [Internet]. [cited 2022 July 3].
- Islam S, Rather L, Mohammad F. Phytochemistry, biological activities and potential of annatto in natural colorant production for industrial applications- A review. *ScienceDirect*. [Internet]. 2016 [cited 2022 July 3]. 7(3):499-514.
- Verma S, Devika T, Tiwari RK, Kumar. Formulation and Evaluation of Natural Lipsticks Prepared from Bixa Orellana Seeds and Daucus Carota Root Extract and their Comparative Study. *ResearchGate* [Internet]. 2017. [cited 2022 July 3].
- CS A, Iwuozor K. Nutritional and Phytochemical Properties of Beta vulgaris L. (Chenopodiaceae)- A Review. *ResearchGate* [Internet]. 2020. [cited 2022 July 3].
- Vadaga A. Design, Development and Evaluation of Herbal Lipstick from Natural Color Pigment. [Internet] *ResearchGate*. 2021 May. [cited 2022 July 3].
- Sainath, M., Kumar, K., Babu, K. Formulation and Evaluation of Herbal Lipstick [Internet]. *IJARmps*. 2016 [cited 2022 Jun 29].
- Singh B, Singh JP, Kaur A, Singh N. Phenolic compounds as beneficial phytochemicals in pomegranate (*Punicagranatum* L.) peel: A review. *ScienceDirect* [Internet]. 2018 Sep 30. [cited 2022 July 3];261:75-86.
- Suthar MH, Singh V, Jain P. Formulation and evaluation of herbal lipstick from pomegranate pigments. *Journal of Pharmacognosy and Phytochemistry*. [Internet]. 2021 [cited 2022 July 3];11(1):129-131.
- Shaikh IA, Muddapur UM, Bagewadi ZK, Chiniwal S, Ghoneim MM, Mahnashi MH, Alsaikhan F, Yaraguppi D, Niyonzima FN, More SS, Mannasaheb BA, Ali AA, Asiri A, Khan AA, Iqbal S. Characterization of Bioactive Compounds from *Acacia concinna* and Citrus limon, Silver Nanoparticles' Production by *A. concinna* Extract, and their Biological Properties. *Molecules* [Internet] 2022. [cited 2022 July 3]; 27(9).
- Kolsure J, Shaikh K, Bawage N, Bawage S. Formulation and Evaluation of Lipstick from Beta Vulgaris. *International Journal of Research Publication and Reviews* [Internet]. [cited 2022 July 3];2(7):1650-1653.
- Maria J, Gabriela R, Nora E, Graciela A. Chemical evaluation, bioactive compounds and antioxidant activity of *Rosa rubiginosa* L. fruit and seed. *GSC Biological and Pharmaceutical Sciences*. [Internet] 2017. [cited 2022 July 3];1(3):44-53.
- Brudzynska P, Sionkowska A, Grizel M. Plant-Derived Colorants for Food, Cosmetic and Textile Industries: A Review. [Internet] 2021. [cited 2022 July 3];14(13).
- Pandita D. Chapter 14- Saffron (*Crocus sativus* L.): phytochemistry, therapeutic significance and omics-based biology [Internet]. 2021. [cited 2022 July 3].
- Mzabri, Addi, &Berrichi. Traditional and Modern Uses of Saffron (*Crocus Sativus*). *Cosmetics* [Internet] 2019, [cited 2022 July 10];6(4), 63.
- Swamy MK, KM S, Prakash L. Phytochemical screening and in vitro antimicrobial activity of *Bougainvilleaspectabilis* flower extracts. *ResearchGate* [Internet] 2012. [cited 2022 July 3];4(3):375-379.
- Ghogar A, Jiraungkoorskul K, Jiraungkoorskul W. Paper Flower, *Bougainvilleaspectabilis*: Update Properties of Traditional Medicinal Plant. *ResearchGate* [Internet] 2016 [cited 2022 July 3];16(3):82.
- Joshi LS, Pawar HA. Herbal cosmetics and cosmeceuticals: An overview. *Nat Prod Chem Res*. 2015 Feb 16;3(2):170.
- Wathoni NA, Haerani A, Yuniarsih N, Haryanti RE. A review on herbal cosmetics in Indonesia. *International Journal of Applied Pharmaceutics*. 2018;10(5):13-6
- Mishra P, Dwivedi S. Formulation and Evaluation of Lipstick Containing Herbal Ingredients [Internet]. *Researchgate.net*. 2012 [cited 2022 Jun 29].
- Vishwakarma, B., Dwivedi, S., Dubey, K., Joshi, H. Formulation and Evaluation of Herbal Lipstick [Internet]. *Ennobleacademic*. 2018 [cited 2022 Jun 29].
- Kothari R, Shukla B, Gautam D, Bagaria M, Sharma A. Formulation and Evaluation of Herbal Lipstick from Natural Edible Coloring Matter. [Internet]. 2017Dec12 [cited 2022 July 3];(2249-3247).
- Formulation and Evaluation of Herbal Lipstick using Lycopene Extracted from *Solanum lycopersicum* L. Bhagwat DA, Patil ND, Killedar SG, More HN. [Internet] *Research Journal of pharmacy and Technology*. [cited 2022 July 4];10(4).
- Jamdade, K., Kostha, A., Jain, N., Dwivedi, S., Malviya, S., Kharia, A. Formulation and Evaluation of Herbal Lipstick Using Beta Vulgaris and *PunicaGranatum* Extract [Internet]. 2020 [cited 2022 July 3].
- Sajda .S. Affat. Classifications, Advantages, Disadvantages, Toxicity Effects of Natural and Synthetic Dyes: A review. *jsci* [Internet]. 2021May18 [cited 2022Jul.13];8(1):130-5.



- Mawazi, S., Redzal, N., Othman, N., Alolayan, S. Lipsticks History, Formulations, and Production: A Narrative Review. Mdpi [Internet] 2022 [cited 2022 July 3].
- Dash, G., Majeed, S., Zubir, N. Formulation and Evaluation of Lipsticks containing NepheliumLappaceum Seed fat and other Natural Ingredients. Asian Journal of Pharmaceutical and Clinical Research [Internet] 2018 [cited 2022 July 3]
- Rajpurohit, J., Shaikh, S., Valvi, P., Jain V.H. Pawar SP. Formulation and Evaluation of Herbal Lipstick by Using Bixa Orellana as Colouring Pigment. JPACR [Internet] 2017 [cited 2022 July 3].
- Elumalai, A., Eswaraiah, M., Nikhitha, M. Formulation and Evaluation of a Herbal Lipstick from Punicagranatum Fruit Peel. Proquest [Internet] 2012. [cited 2022 July 3].
- Mahanthesh M., Manjappa A., Shinde M., Sherikar A., Disouza J., Namrata B., Kranti K., Ajija W. Design, Development and Assessment of Herbal Lipstick from Natural Pigments. Global Research Online [Internet] 2020 [cited 2022 July 3].
- Gore T.A., Rodge P. Formulation and Evaluation of Herbal Lipstick Containing Antifungal Agent. Indo American Journal of Pharmaceutical Research. 2018;8(01).
- Ghongade K. D., Bodake V., Badadare S., Magdum M., Gawande N., Kate S., Waghmare K. Formulation and Evaluation of some Cosmetic Preparations using novel natural colorant from *Ixora coccinea*. 2021;11(01).
- Evaluation of Lipsticks [Internet]. Pharmacy Cosmetic Formulation. [cited 2022 July 30]
- Pavani C, Reddy PT. Formulation and Evaluation of Herbal Lipstick from *Rosa kordesii* [Internet]. ResearchGate. 2020 [cited 2022 July 30].
- Mawazi SM, Redzal NABA, Othman N, Alolayan SO. Lipsticks History, Formulations, and Production: A Narrative Review. 2022;9(1).
- Juma'at N, Rhamat NA, Hamidi SA, Adnan N. The Production and Stability Evaluation of Natural Lipstick. MARI. 2021;2(2):220-225.
- Formulation of Lipsticks [Internet]. Pharmacy Cosmetic Formulation. [cited 2022 July 30].
- Aher, A., Bairagi, S., Kadaskar, P., Desai, S. Formulation and evaluation of herbal lipstick from colour pigments of *Bixa Orellana* (Bixaceae) seeds [Internet]. Academia.edu. 2012. [cited July 29, 2022]
- Ling T. Preparation Of Lipstick With Red Draon Fruit (*HolycereusPolyrhizus*) Pigment And Storage Stability Study [Internet]. Eprints.utar.edu.my. 2020 [cited 29 July 2022].