

Herbal Creams: An Overview

Jayita Roy¹, Arna Pal¹, Sudipta Chakraborty¹, Ayon Haldar¹, Malay Biswas¹

¹BCDA College of Pharmacy and Technology, Maulana Abul Kalam Azad University of Technology, Hridaypur, Kolkata, 700127, West Bengal, India.

Corresponding Author: Jayita Roy

DOI: <https://doi.org/10.52403/ijhsr.20240717>

ABSTRACT

Semi solid dosage forms that are usually applied topically on skin are called creams. This study mainly focuses on the preparation and evaluation of herbal creams along with some of the common herbs utilized in these types of formulations. The herbal cream is basically water in oil type of emulsion. The natural ingredients chosen for preparation of herbal cream are Turmeric, Papaya, Aloe-Vera, Tulsi, Amla, Cucumber, Neem. The choice of these ingredients is based on their individual properties. The preparation of the cream is basically done by using the cream base i.e., liquid paraffin, beeswax, borax, methyl paraben. These formulations can be evaluated by various parameters like pH, viscosity, irritancy, spreadability, microbial growth, thermal stability, homogeneity, acid value, saponification value, accelerated stability studies, patch test, smear test, after feel, washability, physical properties, dye test, after feel, in vitro diffusion study, etc. Chemical based cosmetics are harmful to the skin and an increased awareness among consumers for herbal products triggered the demand for natural products and natural extracts in cosmetics preparations. The increased demand for the natural product has created new avenues in cosmeceutical market. The natural content in the botanicals does not cause any side effects on the human body; instead enrich the body with nutrients and other useful minerals.

Keywords: Cosmetics, herbal creams, semisolid dosage forms, turmeric, aloe vera.

INTRODUCTION

The word "cosmetics," that means to adorn, originates from the Greek word "kosmetikos." From that time, any product administered to improve or enhance appearance is commonly known as a cosmetic. In reality, the word "cosmetics" emerged in Ancient Rome. They are made by using a desired amount of wax and cocoa butter.^[1-3] Cosmetic products enhance the overall appearance and beauty of skin while protecting it against internal as well as external harmful agents.^[4-5] Cosmetics are used to improve one's outward look while

also preventing skin disorders and promoting long-term health.

The artificial or natural components found in skin care products that preserve the skin's elasticity, health, texture, and integrity as well as moisturize and reduce type I collagen while providing photoprotection, among other benefits.^[6] This cosmetic's long-lasting ability to modify skin qualities and significantly reduce the build-up of free radicals in the skin is the outcome of elements found in skin care formulation. Whenever it involves preventing unnecessary imperfections in the skin especially hyperpigmentation, aging, creases,

and rough skin texture, among others, cosmetic products are the most effective option.^[7-8] The consumer demand towards herbal beauty products increasing rapidly. Plant components used when preparing cosmetic should have variety of characteristics, including antibacterial, emollient, antiseptic, anti-inflammatory, and antioxidant.^[9] In comparison to products containing synthetic compounds, natural products are believed to have less adverse consequences. In contrast to synthetic products, which are toxic to human health, a term "herbal" emphasizes safety. The market statistics shows that the herbal industry is gradually increasing, with the herbal cosmetics sector adding greatly to the global demand for herbal goods.^[10-11]

Both men and women use cosmetics like colognes, gels, and moisturizers on a daily basis. In many situations, creams function as a face cleanser.^[12-13] Cosmetic creams act as skin food for dry, chapped, and hard skin. It basically softens, lubricates, and eliminates the skin of undesirable dirt. Vaseline and Lanolin are some of the widely used fat creams. Soap and gelatin, which function as the skin's base, are produced from dry creams.^[14] Cosmetics enhance our looks and boost our self-esteem. Based on the abundance of cosmetics available today, it is evident they are extremely essential to daily existence.^[15]

CREAMS

Creams are semisolid dosage forms that are administered topically to the skin, on the eye's surface, or applied rectally, vaginally, or through the nose for medical, preventive, or cosmetic purposes.^[16] Face cream is used topically to achieve a softening and cleansing effect. Skin creams possess two main purposes: they protect the skin from environmental pollutants and provide skin with a calming effect.^[14,17] There are different kinds of cream, namely hand and body

massage, vanishing, night, cleansing, cold, and foundation creams.^[18]

HERBAL CREAMS

Herbal creams are emulsions which includes both oil and water. They may contain things like neem, papaya, aloe vera, Tulsi, and turmeric.^[19] Different tinctures, extracts, and essential oils can be found in herbal creams. Vitamins and minerals are natural nutrients found in herbal creams, which are free of synthetic additives that might be toxic.^[19-21]

TYPES OF HERBAL CREAMS

They fall into two categories:

- a) **Oil-in-water (O/W) Creams:** Creams that consist of small oil droplets distributed in a continuous phase are referred to as oil-in-water (O/W) creams. Whereas, an emulsion containing oil droplets dispersed across the aqueous phase is referred to as an oil-in-water (O/W) emulsion.^[22]
- b) **Water-in-oil (W/O) Creams:** creams consisting of water combined with oil in a continuous phase, are referred to as water-in-oil (W/O) creams. The emulsion is considered to be water-in-oil (W/O) type when the dispersed phase is water and the dispersion medium is oil.^[23]

PREPARATION OF HERBAL CREAMS

Vast types of plants and plant products are used in manufacturing of different types of herbal creams which are intended for different aims of applications. However, all the methods follow some common chain process that can be presented as follows.

The process starts with the collection of raw plant materials which after procurement are cleaned and quality assessment of the same are performed. Thereafter depending on need these are dried or processed as such. In the next step the raw plant materials, wherever applicable, are extracted utilizing standard methods and specific solvents or juice/gels

are collected using standard methods. The oil phase preparation is the next step where liquid paraffin and beeswax are heated to 75 °C consistently which yields the oil phase to be used in creams.

Borax and methyl paraben are mixed with distilled water are heated to 75 °C to create a clear solution. This is known as preparation of aqueous phase. Once the oil phase is heated, gradually water phase is added to it and mixed which is then followed by addition of the herb extract or juices or jelly to yield smooth creams. Finally appropriate aroma is added and the product is ready to be packed. [24-26]

COMMON EXCIPIENTS AND THEIR ROLES

Many of different types of excipients are used in the formulations of creams or herbal creams. Few of very common and extensively utilized excipients are bees wax and liquid paraffin which are used as emulsifier, thickener and lubricating agent respectively. A very common alkaline agent is borax which reacts with emulsifying agent to form soap. Methyl paraben is one of the most extensively used preservatives in such type of products. For different types of attractive fragrances usually compatible flower extracts or volatile oils are mixed for such purpose. [25-28]

IDEAL CHARACTERISTICS

1. Good penetration ability, allowing the medication in the cream to absorb into the skin to deliver the intended effect.
2. It should not be poisonous in order to prevent undesirable skin reactions, such as itching, rashes, or redness.

3. It should spread freely across skin when applied.
4. When applied to skin, it should melt or liquefy at body temperature.
5. Be non-irritating and not produce skin inflammation. [24]

ADVANTAGES

1. Ease of application.
2. Easy to utilize.
3. Steering clear of danger.
4. There is no special risk or technician needed for application.
5. Avoid drug level fluctuations in the event of intra- and inter-patient variance.
6. Very good patient adherence. [25]

The benefit of employing cream formulations is their practicality; they can be applied directly to the skin without leaving any traces behind, and they are simple to wash and clean. [26]

LIMITATIONS

1. It can be used primarily for medications that require extremely little plasma concentration for effect.
2. It increases the risk of allergic reaction.
3. Larger particle-sized medications are difficult to absorb through skin pores.
4. Possibility of contact dermatitis or skin irritation from any medication. [27]

COMMON HERBS UTILIZED IN HERBAL CREAMS

Many types of herbs are exploited for their different medicinal and cosmetic preparations. Some of the most common in herbal creams are summarized in the following table 1. [24-29]

Table 1: Common herbs in herbal cream preparations

Common Name	Part used	Chemical Constituents	Uses
Neem	Leaves of <i>Azadirachta indica</i>	Nimbidin, Nimbidal, Nimbin, Limonoids	Anti-oxidant, Antiseptic, Anti-ageing, Treats acne
Aloe vera	Leaves of <i>Aloe barbadensis</i>	Salicylic Acid, Aloesin, Aloeresin A, Aloeresin E, Isoaloeresin D	Anti-oxidant, Cleansing,

			Moisturising, Soothing.
Amla	Fruits of <i>Emblica officinalis</i>	Ascorbic Acid, Gallic Acid, Emblicanin A, Emblicanin B	Antioxidant, Anti-Inflammatory, Anti-ageing, Antimicrobial.
Cucumber	Fruits of <i>Cucumis sativus L.</i>	Cucurbitacin D, Vitamin C, Folic acid	Anti-oxidant, Anti-microbial, Cooling, Soothing.
Turmeric	Dried rhizomes of <i>Curcuma longa</i>	Curcumin and curcuminoids	Anti-oxidant, Anti-aging, Moisturizing, Antimicrobial, Treats acne.
Tulsi	Leaves of <i>Ocimum sanctum Linn</i>	Oleanolic Acid, Ursolic Acid, Linalool, Rosmarinic Acid	Antimicrobial, Antifungal, Antibacterial, Antioxidant. Anti-aging
Clove	Dried flower buds of <i>Eugenia caryophyllus</i>	Eugenol, Eugenol acetate, Caryophyllene	Anti-oxidant, Antimicrobial, Antifungal, Anti-Inflammatory.

EVALUATION OF HERBAL CREAM

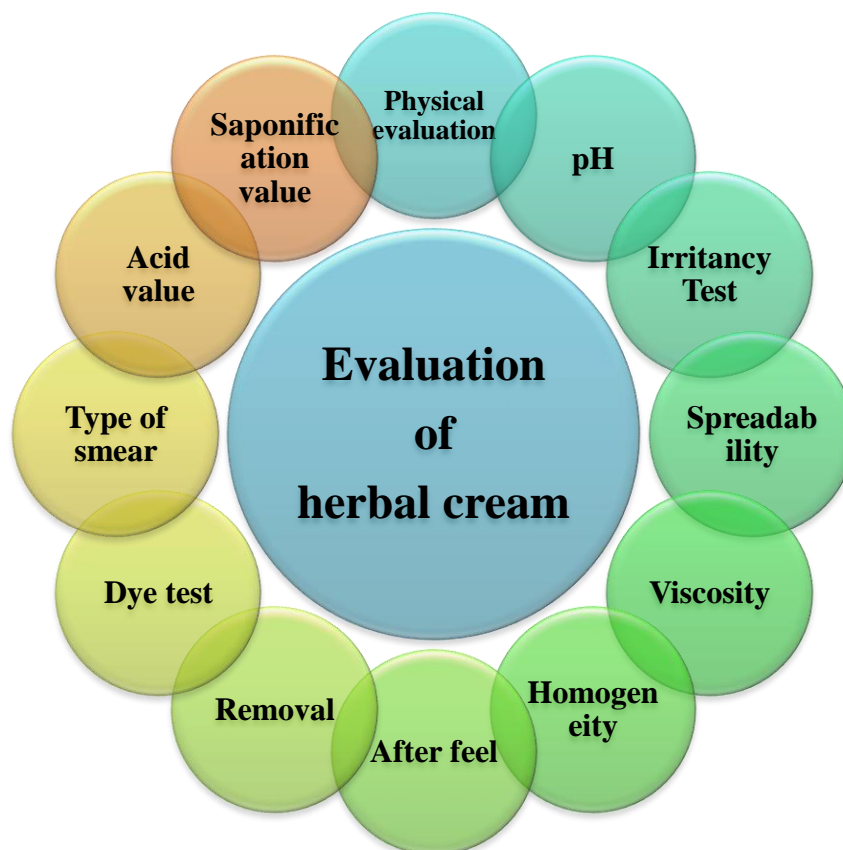


Figure 1: Different parameters of evaluation of herbal creams

Physical evaluation

The following physical characteristics are used to evaluate the herbal cream formulations. [28]

- a. **Color:** The cream's color is identified through visual inspection.
- b. **Odor:** The cream's odor is mostly distinctive.
- c. **Consistency:** A manual rubbing of the cream on the hand is used to assess the formulation. The consistency of the cream is smooth. No oily residue must be left on the skin's surface after the use of the cream.
- d. **State:** The cream's condition is visually inspected. The cream must be in a semisolid form. [29-31]

pH

A digital pH meter can be used to measure the pH of the produced herbal cream. After preparing the cream solution with 100 milliliters of distilled water, it should be left for two hours. For the answer, pH should be measured three times, and the average value of the solution must be computed. [32]

Irritancy test

On the left dorsal surface, mark an area of one square centimeter. Cover the designated area with cream, and record the time. For up to 24 hours, irritability, erythema, and edema must be monitored and reported at regular intervals. [33]

Spreadability

A sufficient amount of cream is divided between two glass slides, and the slides are subjected to a 5-minute weight application of 100 grams. The spreadability of the two slides are measured by monitoring the movement of the upper glass slide over the lower slide, or the amount of time needed to separate them.

The formula for it is $S = m \times l/t$.

Where, m = weight on the upper slide.

l = length travelled on the glass slide.

t = amount of time spent. [34]

Viscosity

By using spindle no. 7 and a Brookfield viscometer set to 100 rpm, one can measure the viscosity of herbal cream formulations. [29]

Homogeneity

The homogeneity of the formulation can be evaluated by touch and appearance. [30]

After feel

Checks were made for emollience, slipperiness, and amount of residue remaining after applying a set amount of cream. [35]

Removal

The treated area should be washed with tap water in order to determine how easily the herbal creams could be removed. [36]

Dye test

The cream is combined with the scarlet color. Under a microscope, observe a small amount of cream that has been placed on a slide and protected with a cover slip. It is an o/w type if the dispersed globule appears reddish while the ground appears colorless; w/o type creams exhibit the opposite characteristic. [37]

Type of smear

After the cream is applied, the kind of smear or film that developed on the surface of the skin is examined. [38]

Acid value

After precisely weighing and dissolving 10 grams of the material in 50 milliliters of an equal volume mixture of alcohol and solvent ether, the flask is to be connected to a reflux condenser and heated gradually until the sample is completely dissolved. 1 ml of phenolphthalein should be then added, and the mixture is titrated with 0.1N NaOH until a faint pink color appeared after 30 seconds of shaking.

Acid value = $n \times 5.61/w$

n = the amount of ml of NaOH required.

w = the weight of substance.^[8]

Saponification value

After adding approximately 2 grams of the material to 25 milliliters of 0.5 N alcoholic KOH and refluxing it for 30 minutes, 1 milliliter of phenolphthalein should be added and titrated right away with 0.5 N HCL.

Saponification value = $(b-a) \times 28.05/w$

a =The volume in ml of titrant.

b = The volume in ml of titrate.

w = The weight of substance in gm.^[39]

GLOBAL BUSINESS ASSESSMENT OF HERBAL COSMETICS INDUSTRY

Yearly growth of herbal cosmetics industry

A 2023 study projects that the herbal cosmetics market will expand at a compound annual growth rate (CAGR) of 6.83% throughout 2022 to 2027, ^[40] resulting in a \$34.64 billion value rise.^[41]

Here are some further market estimations for herbal beauty products:

2021: The market was estimated to be worth \$18,840.72 million.

2022: The market was valued at \$75.1 billion.

2023–2028: The market is expected to grow at a CAGR of 5.6% to reach \$104.43 billion in 2028.

2023–2032: The market is expected to grow at a CAGR of 5% to reach \$137.79 billion by 2032.

2024–2029: The market is expected to grow at a CAGR of 6.90% to reach \$155.11 billion by 2029. ^[42-43]

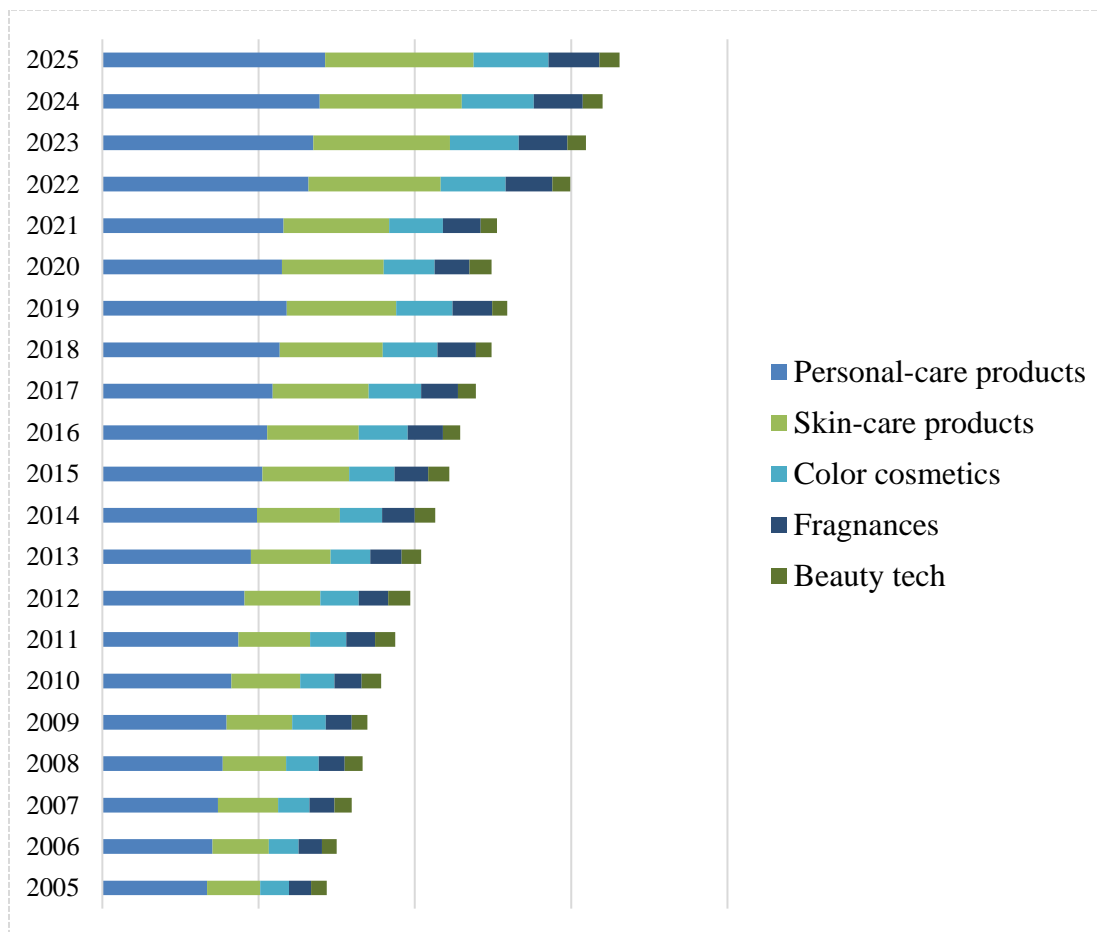


Figure 2: Global Beauty-Industry Retail Sales

CONCLUSION

Natural remedies are more acceptable in the belief that they are safer with fewer side effects than the synthetic ones.

The Uses of bioactive ingredient in topical formulations influence biological functions of skins and provide nutrients necessary for the healthy skin. There are various herbs available naturally having different uses in cream preparations. Herbal creams are considered as sustaining and productive way to advance the appearance of skin. They also consist of natural nutrients like Vitamins and minerals that keep skin healthy, glowing and lustrous. Herbal creams are used to stimulate blood circulation, rejuvenates those muscles and help to maintain the elasticity of the skin and remove dirt from skin pores. During the past few decades herbal formulations have growing demand in the world market and today play a major economic role in the cosmetics industry. More research works towards the safety, efficacy and user compliance in these formulations may lead to more demands of such formulations which will take them through to the peak in global business.

Declaration by Authors

Ethical Approval: Not Applicable

Acknowledgement: None

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

REFERENCES

1. Mukund M, Shete SS, Jain S. Preparation and Evaluation of Herbal Turmeric Cream. *International Journal of Innovative Research in Technology*. 2023; 10(1): 182-187.
2. Mohiuddin AK. Cosmetics in use: a pharmacological review. *Journal of Dermatology & Cosmetology*. 2019;3(2):50–67. doi:10.15406/jdc.2019.0300115.
3. Mohiuddin AK. Chemistry behind Cosmetics: An Extensive Review. *Scholars International Journal of Chemistry and Material Sciences*. 2019;2(4):54-79. doi:10.36348/sijcems.2019.v02i04.003.
4. Rathod S, Mali S, Shinde N, et al. Cosmeceuticals and Beauty Care Products: Current trends with future prospects. *Research J. Topical and Cosmetic Sci*. 2020;11(1):45-51. doi:10.5958/2321-5844.2020.00008.4.
5. Ahmed IA, Mikail MA, Zamakshshari N, et al. Natural anti-aging skincare: role and potential. *Biogerontology*. 2020;21(3):293-310. doi:10.1007/s10522-020-09865-z.
6. Hoang HT, Moon J-Y, Lee Y-C. Natural Antioxidants from Plant Extracts in Skincare Cosmetics: Recent Applications. Challenges and Perspectives. 2021;8(4):106. doi:10.3390/cosmetics8040106.
7. Aswal A, Kalra M, Rout A. Preparation And Evaluation Of Polyherbal Cosmetic Cream. *Der Pharmacia Lettre*. 2013;5(1):83-88.
8. Himaja N. Formulation and Evaluation of Herbal Cream from *Azadirachta Indica* Ethanolic Extract. *International Journal of Research in Drug & Pharmaceutical Science*. 2017;1(1):23-26.
9. Ashawat MS, Banchhor M, Saraf S, et al. Herbal Cosmetics: Trends in Skin Care Formulation. *Phcog Rev*. 2009;3(5):82-89.
10. Mali P, Rajguru A, Patil N, et al. Technological advances and future outlook in biocosmetics. *International Journal of Creative Research Thoughts*. 2023;11(2): b44-b50.
11. Ekor M. The growing use of herbal medicines: issues relating to adverse reactions and challenges in monitoring safety. *Front Pharmacol*. 2014; 4:177. doi:10.3389/fphar.2013.00177.
12. Mohiuddin AK. Skin care creams: formulation and use. *Dermatology Clinics & Research*. 2019;5(1):238-271.
13. Shivanand P, Nilam M, Viral D. Herbs play an important role in the field of cosmetics. *International Journal of Pharm Tech Research*. 2010;2(1):632-639.
14. Chauhan L, Gupta S. Creams: A review on classification, preparation methods, evaluation and its applications. *Journal of drug delivery and therapeutics*. 2020;10(5-s):281-289. doi:10.22270/jddt. v10i5-s.4430.
15. Franchina V, Lo Coco G. The influence of social media use on body image concerns.

- International Journal of Psychoanalysis & Education. 2018;10(1): 5-14.
16. Nashier P, Berwar K, Kaushik D, et al. A Concise Review on Designing Of Dosage Forms. World Journal of Pharmaceutical Research. 2022;11(16):198-225.
 17. Arora R, Aggarwal G, Dhingra G, et al. Herbal active ingredients used in skin cosmetics. Asian Journal of Pharmaceutical and Clinical Research. 2019;12(9):7-15. doi:10.22159/ajpcr. 2019.v12i9.33620.
 18. Pradeepa T, Kumar MA, Murali A. A Pharmaceutical Cream. World Journal of Pharmaceutical Research. 2023;12(14): 110-121. doi:10.20959/wjpr202314-29261.
 19. Kumar D, Rajora G, Parkash O, et al. Herbal cosmetics: An overview. International Journal of Advanced Scientific Research. 2016;1(4):36-41.
 20. Bijauliya RK, Alok S, Kumar M, et al. A comprehensive review on herbal cosmetics. International Journal of Pharmaceutical Sciences and Research. 2017;8(12):4930-4949. doi:10.13040/IJPSR.0975-8232.8(12).4930-49.
 21. Goyal A, Sharma A, Kaur J, et al. Bioactive-based cosmeceuticals: An update on emerging trends. Molecules. 2022;27(3):828. doi:10.3390/molecules27030828.
 22. Khan BA, Akhtar N, Khan HM, et al. Basics of pharmaceutical emulsions: A review. African journal of pharmacy and pharmacology. 2011;5(25):2715-2725. doi:10.5897/AJPP11.698.
 23. Sarath Chandra prakash NK, Mahendra C, Prashanth SJ, et al. Emulsions and emulsifiers. The Asian Journal of Experimental Chemistry. 2013;8(1&2):30-45.
 24. Swetha M, Iswariya VT, Maryswarnalatha K, et al. Review Article on Preparation and Evaluation Of Herbal Face Cream. Annals Of Forest Research. 2022;65(1):10315-10323.
 25. Shendage A.S, Kale H.B, Jadhav Sunita T. Formulation And Evaluation Of Herbal Cold. International Journal of Creative Research Thoughts. 2022;10(10):b440-b445.
 26. Estefania KV, Silalahi J, Sumaiyah S, et al. Formulation and Evaluation of Cream Turmeric Extract Preparations from Turmeric Rhizomes (*Curcuma domestica Val.*). Indonesian Journal of Pharmaceutical and Clinical Research. 2022;5(1):01-09. doi:10.32734/idjpcr.v5i1.6479.
 27. Sirsat SV, Rathi NM, Hiwale AS, et al. A review on preparation and evaluation of herbal cold cream. World Journal of Pharmaceutical Research. 2022;11(5):690-697. doi:10.20959/wjpr20225-23891.
 28. Badwaik CB, Lade UB, Agarwal T, et al. Formulation and Evaluation of Herbal Face Cream. International Journal of Pharmaceutical Research and Applications. 2022;7(1):955-960. doi:10.35629/7781-0701955960.
 29. Babu R, Semwal A, Sharma S, et al. Formulation And Evaluation Of Polyherbal Cream. World Journal of Pharmaceutical Research. 2022;11(8): 646-660. doi:10.20959/wjpr20228-24274.
 30. Rajvanshi A, Sharma S, Khokra SL, et al. Formulation and evaluation of *Cyperus rotundus* and *Cucumis sativus* based herbal face cream. Pharmacologyonline. 2011;2(1):1238-1244.
 31. Ruhil P, Kuman V, Minochi N. Formulation and evaluation of herbal cream used in the treatment of arthritis research. Indian J Res. 2018; 7:356-357.
 32. Chandrasekar R, Sivagami B. Formulation and evaluation of a poly herbal skin care cream containing neem and Tulsi. Research Journal of Topical and Cosmetic Sciences. 2018;9(1):25-32. doi:10.5958/2321-5844.2018.00006.7.
 33. Verma A, Ahuja D. Formulation and Evaluation of an herbal cream containing extract of *Curcuma longa* and *Trigonella Foenum* seeds Powder. Pakistan Heart Journal. 2023;56(3):598-600.
 34. Sabale V, Kunjwani H, Sabale P. Formulation and in vitro evaluation of the topical antiageing preparation of the fruit of *Benincasa hispida*. J Ayurveda Integr Med. 2011;2(3):124-128. doi:10.4103/0975-9476.85550.
 35. Lukic M, Jaksic I, Krstonosic V, et al. A combined approach in characterization of an effective w/o hand cream: the influence of emollient on textural, sensorial and in vivo skin performance. International journal of cosmetic science. 2012;34(2):140-149. doi:10.1111/j.1468-2494.2011. 00693.x.

36. Bhide MM, Nitave SA. Formulation and evaluation of polyherbal cosmetic cream. *World Journal Of Pharmacy And Pharmaceutical Sciences*. 2016;5(1):1527-1536.
37. Rabade VS, Pawar MS, Titarmare GK. Formulation and Evaluation of Polyherbal Cold Cream. *International Journal for Pharmaceutical Research Scholars*. 2020;9(4):25-31.
38. Sahu RK, Roy A, Kushwah P, et al. Formulation and development of face cream containing natural products. *Research Journal of Topical and Cosmetic Sciences*. 2012;3(1):16-19. doi:10.5958/2321-5844.
39. Sahu RK, Roy A, Kushwah P, et al. Formulation and development of whitening polyherbal face cream. *Res. J. Topical and Cosmetic Sci*. 2012;3(1):23-27.
40. Ahuja M, Mondal D, Mishra DP, et al. Assessment of financial and environmental impacts of pre-mining methane drainage in Indian scenario: A case study using Jharia coal seams. *Innovation and Green Development*. 2023;2(3):100065. doi:10.1016/j.igd.2023.100065.
41. Bai S, Ning Y, Zhang B. Estimating the environmental and employment impacts of China's value-added trade from the perspective of value chain routes. *Environmental Science and Pollution Research*. 2022;29(48):73414-73443. doi:10.1007/s11356-022-20575-6.
42. Mansoor K, Aburjai T, Al-Mamoori F, et al. Plants with cosmetic uses. *Phytother Res*. 2023;37(12):5755-5768. doi:10.1002/ptr.8019.
43. Vasisht K, Sharma N, Karan M. Current Perspective in the International Trade of Medicinal Plants Material: An Update. *Current pharmaceutical design*. 2016;22(27):4288-4336. doi:10.2174/1381612822666160607070736.

How to cite this article: Jayita Roy, Arna Pal, Sudipta Chakraborty, Ayon Haldar, Malay Biswas. Herbal creams: an overview. *Int J Health Sci Res*. 2024; 14(7):136-144. DOI: <https://doi.org/10.52403/ijhsr.20240717>
