



Natural Radiance Unveiled: A Comprehensive Review of Herbal Cosmetics and their Transformative Effects

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Received Date: March 28, 2024; **Published Date:** April 16, 2024

Abstract

The use of herbal cosmetics has gained popularity due to their natural composition and perceived benefits over synthetic products. This comprehensive review explores the transformative effects of herbal cosmetics on skin, hair, nails, and oral hygiene. The benefits of using natural cosmetics include their safety, suitability for all skin types, lack of animal testing, absence of negative side effects, and affordability. Cosmeceuticals, a combination of cosmetics and pharmaceuticals, are also discussed, highlighting their various mechanisms of action and examples of active ingredients. The classification of herbal cosmetics based on dosage form and the body part to be applied on is presented, along with specific examples of herbal ingredients used in skin care, hair care, and oral care products. The study of drugs used in cosmetics is examined, featuring plants such as soapnut, amla, henna, hibiscus, tea, aloe, and liquorice. This review provides valuable insights into the world of herbal cosmetics and their potential in enhancing beauty and well-being.

Keywords: Herbal Cosmetics; Herbal Drug; Cosmeceuticals; Drugs Used in Cosmetics

Abbreviations: BHA: Butylated Hydroxyanisole; BHT: Butylated Hydroxytoluene; GMP: Good Manufacturing Practices; WHO: World Health Organization; HPLC: High Performance Liquid Chromatography; GC: Gas Chromatography; TLC: Thin Layer Chromatography; AHAs: Alpha Hydroxy Acids.

Introduction

Herbal cosmetics are referred to as beauty products which are formulated by using various herbal ingredients to provide defined cosmetic benefits. The word cosmetic is derived from the Greek word "kosmtikos" meaning having the power, arrange, skill in decorating. The origin of cosmetics forms a continuous narrative throughout the history of man as they

developed in prehistoric times 3000BC. People employed different lepas, such as Alepas, Pralepas, Udavartans, and Prakshalans, among others, for saundryaprasadan karma in the traditional era. We have a variety of plants from nature [1]. A plant or plant extract that includes leaves, bark, berries, roots, gums, seeds, stems, flowers, and fruits and which functions as a feeding and therapeutic component is called a herb. The use of herbal cosmetics has become increasingly widespread. Due to their frequent usage in daily life, herbal cosmetic goods are said to have inherent acceptance and efficacy and to avoid the negative consequences frequently associated with synthetic products that are formed of harmful chemicals and other substances. Numerous plants and herbs were used by the science of Ayurveda to create cosmetics for attractiveness and defence against external impacts

including exposure to germs, chemicals, and environmental toxins [2]. The benefits of utilising natural cosmetics, which make them a superior and safe option, are as follows:

Natural Products

Herbal cosmetics are natural, as the name implies. They are free of all dangerous synthetic compounds that have been shown to be detrimental to human skin. In herbal products, various plant components and extracts are utilised. Additionally, they contain organic elements including vitamins and minerals that keep skin young-looking, radiant, and shiny. Numerous herbal extracts are available, including *Andrographis paniculata* (Kalmegh), *Asparagus racemosus* (Shatavari), *Boswellia serrata* (SalaiGuggal), *Asphalt* (Shilajit), *Aloe Vera* (Aloe Barbadensis), and many others [3].

Safe and Useful

Natural cosmetics are the most effective and safest to use when compared to other beauty products that are oversaturated on the market. They are made by Ayurvedic Experts to be non-toxic and hypoallergenic. People don't need to be concerned about developing skin problems like rashes or itching because they are made of natural materials. Many individuals are unaware that the synthetic antioxidants BHA (butylated hydroxyanisole) and BHT (butylated hydroxytoluene) are employed as preservatives in moisturisers and many other types of beauty products. BHA and BHT might cause adverse skin responses. Natural antioxidants can be found in herbal cosmetics [4].

Fit for Every Skin Type

All skin types can use natural cosmetics. Anyone with any type of skin can use them without having to worry about their skin getting worse. When choosing herbal cosmetics, it's essential to consider individual sensitivities and allergies. Patch testing a small amount of the product on a small area of skin can help identify any adverse reactions before full application. Additionally, always look for products that are free from harsh chemicals, artificial fragrances, and preservatives, as these can irritate the skin, particularly sensitive types [5].

Not Animal Tested

To make sure they are secure for human use, the majority of cosmetics are initially tested on animals. However, it is not necessary to test natural cosmetics on animals. Ayurvedic experts test these natural medicines in labs with cutting-edge machinery without involving any animals.

No Negative Effects

Synthetic beauty products can irritate the skin, and cause pimples. They might block skin pores and make the skin dry

or oily. The natural ingredients used assure no side effects. For example, herbal cosmetics are free from parabens that are the most widely used preservatives in cosmetics and can penetrate the skin and are suspected of interfering with hormone function (endocrine disruption) [6].

Affordable to Use

Natural cosmetics are not that expensive. Some of these products are more affordable than synthetic ones. An estimate of WHO demonstrates about 80% of the world population depends on natural products for their health care, because of side effects inflicted and the rising cost of modern medicine. World Health Organization currently recommends and encourages traditional herbal cures in natural health care programs as these are easily available at low cost and are comparatively safe [7].

Evaluation of Herbal Drug

WHO & ICH Guidelines for the Assessment of Herbal Drug

Assessment, Evaluation, and Standardization of drug means confirmation of its identity and determination of its quality and purity and detection of nature of adulterant by various parameter like morphological, microscopic, physical, chemical and biological observation. The evaluation of Herbal drug is necessary because of three main reason is Biochemical variation in Drug, Deterioration due to improper processing and storage, and Adulteration and substitution. Evaluating herbal drugs involves assessing their safety, efficacy, quality, and potential interactions [8-10]. Here are some key considerations in evaluating herbal drugs:

Safety: Safety is paramount when evaluating any drug, including herbal medicines. Assessing safety involves understanding potential side effects, toxicity, and the risk of adverse reactions. This includes evaluating the herb's traditional use, reported adverse events, and any known interactions with medications or other herbs.

Efficacy: Determining the efficacy of herbal drugs requires scientific evidence from clinical trials and research studies. Studies should investigate the herb's effectiveness in treating specific conditions, its mechanism of action, and any potential benefits compared to standard treatments or placebo. Meta-analyses and systematic reviews can help evaluate the overall strength of evidence supporting the herb's efficacy.

Quality Control: Quality control is critical to ensure the consistency, purity, and potency of herbal drugs. This involves assessing factors such as sourcing, cultivation, harvesting, extraction methods, and manufacturing processes. Standardization of herbal extracts to specific bioactive compounds or marker compounds can help ensure product quality and consistency.

Standardization and Dosage: Standardization involves ensuring that herbal drugs contain consistent levels of active ingredients or bioactive compounds. Standardization facilitates dose optimization and ensures reproducible therapeutic effects. Establishing safe and effective dosage regimens based on scientific evidence is essential for ensuring therapeutic efficacy and minimizing the risk of adverse effects.

Regulatory Considerations: Herbal drugs are subject to regulatory oversight in many countries to ensure their safety, quality, and efficacy. Regulatory agencies may require manufacturers to provide evidence of safety and efficacy through preclinical studies, clinical trials, and quality control measures. Compliance with Good Manufacturing Practices (GMP) and other regulatory standards is essential for ensuring product quality and consumer safety.

Patient Education and Counselling: Healthcare providers play a crucial role in educating patients about the safe and appropriate use of herbal drugs. This includes discussing potential risks, benefits, contraindications, and drug interactions. Patients should be encouraged to disclose their use of herbal medicines to their healthcare providers to avoid potential adverse reactions or interactions with conventional medications.

Monitoring and Surveillance: Monitoring the safety and effectiveness of herbal drugs requires ongoing surveillance through post-marketing studies, pharmacovigilance programs, and adverse event reporting systems. Healthcare providers, regulatory agencies, and manufacturers should collaborate to monitor and address emerging safety concerns and ensure the continued safe use of herbal drugs.

Crude Drugs

Crude drugs are plant, animal or their parts which after collection are subjected to only drying or making them into transverse/ longitudinal slice piece or peeling them in some cases [11]. Crude drug is generally obtained by plant, animal and mineral origin.

- **Plant Origin:** Whole plant or part of plant like leaves flowers, seed and barks or vegetable saps, extracts and secretions.
- **Animal Origin:** Whole animals, glands or organs, extracts and secretions
- **Mineral Origin:** Ferrous sulfate, Magnesium, Zinc, Gold etc.

Herbal Drug/Formulation

According to WHO, a herbal drug or formulation is regarded as finished labelled products that contain active ingredients such as aerial or underground parts of plant or other plant material or combinations thereof, whether in the crude state or as plant preparations [12].

Guidelines for Quality Control of Herbal formulations

WHO (World Health Organization) has given certain guidelines for assessment of herbal drugs and most of the countries have adopted these guidelines. The following are the aims and objectives of WHO guidelines in standardizing the herbal drugs. Quality control of herbal formulations is crucial to ensure their safety, efficacy, and consistency [13-15]. Here are some guidelines for quality control of herbal formulations:

Identity of Raw Materials: Verify the identity of all raw materials used in the formulation. This includes botanical ingredients, excipients, and additives. Employ methods such as macroscopic and microscopic examination, organoleptic evaluation, and chromatographic fingerprinting to confirm the identity of botanical materials.

Purity and Quality of Raw Materials: Assess the purity and quality of raw materials to ensure they meet established standards and specifications. Test for contaminants such as heavy metals, pesticides, microbial organisms, aflatoxins, and other potential adulterants. Conduct appropriate analytical tests using validated methods and reference standards.

Standardization of Active Ingredients: Standardize herbal formulations to ensure consistent levels of active ingredients or marker compounds. Establish specifications for the concentration or content of key bioactive constituents. Utilize validated analytical methods such as high-performance liquid chromatography (HPLC), gas chromatography (GC), or spectrophotometry to quantify active ingredients.

Good Manufacturing Practices (GMP): Adhere to GMP guidelines to ensure quality, safety, and consistency throughout the manufacturing process. Implement proper procedures for sanitation, hygiene, facility design, equipment maintenance, and personnel training. Maintain detailed records of production, batch documentation, and quality control testing.

Stability Testing: Conduct stability testing to assess the physical, chemical, and microbiological stability of herbal formulations under various storage conditions. Monitor changes in potency, appearance, colour, odour, and microbial contamination over time. Establish expiration dates and storage recommendations based on stability data.

Analytical Techniques: Employ validated analytical techniques to evaluate the quality and consistency of herbal formulations. These may include chromatography, spectroscopy, microscopy, titration, gravimetric analysis, and microbial testing. Ensure that analytical methods are reliable, accurate, specific, and reproducible.

Documentation and Labelling: Maintain comprehensive documentation of all aspects of the manufacturing process, quality control tests, and batch records. Ensure that labelling accurately reflects the composition, potency, dosage, usage instructions, storage conditions, and precautions for

use. Comply with regulatory requirements and labelling standards in the target market.

Quality Assurance Audits and Inspections: Conduct regular quality assurance audits and inspections of manufacturing facilities, suppliers, and contract manufacturers. Evaluate compliance with quality standards, regulatory requirements, and internal procedures. Address any deficiencies or non-conformities identified during audits and implement corrective and preventive actions.

Adverse Event Monitoring and Reporting: Establish mechanisms for monitoring and reporting adverse events associated with herbal formulations. Implement pharmacovigilance systems to collect, analyze, and respond to reports of adverse reactions, side effects, or quality issues. Collaborate with regulatory authorities and healthcare professionals to ensure timely reporting and appropriate risk management.

Continuous Improvement: Foster a culture of continuous improvement in quality control processes and practices. Regularly review and evaluate quality control data, customer feedback, and regulatory updates to identify areas for enhancement and optimization. Implement corrective actions, process improvements, and training initiatives to enhance product quality and compliance.

Drug Evaluation

Drug Evaluation may be defined as the determination of identity, purity and quality of a drug.

- **Identity:** Identification of biological Source of the drug
- **Quality:** The Quantity of the active constituent present.
- **Purity:** The extent of foreign organic material present in a crude drug

Importance of Evaluation of Crude Drugs

It ensures the quality, safety, and efficacy of crude drugs used in traditional medicine, pharmaceuticals, and other industries. Evaluation helps in determining whether the crude drug meets the standards set by pharmacopoeias or regulatory bodies. Evaluation methods help in identifying the crude drug and distinguishing it from other similar substances. This is crucial for maintaining consistency and authenticity in herbal medicine preparations. Purity Assessment allows for the assessment of the purity of crude drugs, ensuring that they are free from contaminants such as microbial pathogens, heavy metals, pesticides, and other adulterants that may compromise their safety and efficacy. Standardization helps in establishing standards for crude drugs by determining their physicochemical properties, such as moisture content, ash value, extractive values, and chemical composition. Standardization ensures consistency in the quality of crude drugs and their preparations. Safety evaluation helps in identifying toxic compounds or substances present in crude drugs that may pose health

risks to consumers [16]. It allows for the detection of potentially harmful substances and helps in establishing safe dosage limits. Efficacy evaluation helps in determining the potency and efficacy of crude drugs by analysing their active constituents and biological activities. This information is essential for ensuring therapeutic effectiveness and optimizing the dosage of herbal medicines. Research and Development evaluation provides valuable data for research and development purposes, facilitating the discovery of new medicinal compounds, formulation of herbal products, and improvement of existing treatments. Regulatory Compliance of crude drugs is often required to comply with regulatory requirements and quality control standards established by government agencies and international organizations. Adherence to these standards helps ensure consumer safety and promotes public health [17].

Authentication of Herbal Drugs

The existence of numerous plant species and subspecies make it difficult to properly identify them, hence it is essential that before starting any processes on herbs, they need to be properly identified and authenticated from a reputed institution or organization. The following institutes are involved in the authentication of herbs. Authentication of herbal drugs is a critical process that involves verifying the identity, purity, and quality of herbal materials used in traditional medicine, pharmaceuticals, and other industries. Authentication ensures that the herbal drugs are genuine, safe and effective for use [18-20].

Macroscopic Evaluation: This involves examining the physical characteristics of the herbal material, such as color, odor, taste, texture, and size, to help identify and authenticate the plant species.

Microscopic Evaluation: Microscopic examination involves studying the cellular structure of the plant material using a microscope. This helps identify characteristic features such as stomata, trichomes, oil glands, and other diagnostic structures unique to specific plant species. Helps in the study of the presence of adulterants & correct identification of the medicinal plants. Drug is soaked in water if it is not fresh, then fine T.S is taken and stained for study of the arrangement of the cells important staining liquids used are phloroglucinol and HCl for lignified tissues, Chlor-zinc iodide for cellulose tissues, Ruthenium Red for gums & mucilage containing cells. The slides of this test drug are compared with the slides of the authentic crude drugs. This helps in the study of substances like starch, fixed oils, aleurone grains, calcium oxalate, mucilage etc., e.g. P-amarous shows wavy walled epidermal parenchyma whereas Pmadraspatensis shows straight walled epidermal parenchyma.

Chemical Analysis: Chemical analysis involves identifying and quantifying the chemical constituents of herbal drugs using various analytical techniques such as chromatography

(e.g., HPLC, TLC), spectroscopy (e.g., UV-Vis, FTIR, NMR), and mass spectrometry. Comparison of chemical profiles with reference standards helps in authentication and quality assessment.

Thin Layer Chromatography (TLC): TLC is a simple and cost-effective method used for the separation and identification of chemical compounds in herbal drugs. It helps in detecting the presence of specific phytochemical markers characteristic of particular plant species.

High-Performance Liquid Chromatography (HPLC): HPLC is a widely used technique for the quantitative analysis of active constituents in herbal drugs. It enables the separation, identification, and quantification of compounds such as alkaloids, flavonoids, glycosides, and phenolic acids.

DNA Barcoding: DNA barcoding involves sequencing specific regions of the plant genome to identify and authenticate herbal materials. This molecular technique provides accurate species-level identification and helps detect adulteration or substitution in herbal products.

Microbiological Analysis: Microbiological testing helps assess the microbial quality and safety of herbal drugs by detecting the presence of pathogenic microorganisms, yeast, and mold. This is especially important for herbal materials susceptible to contamination during cultivation, harvesting, storage, and processing.

Organoleptic Evaluation: Organoleptic evaluation involves assessing the sensory properties of herbal drugs, including appearance, colour, odour, taste, and texture. Any deviation from the expected sensory characteristics may indicate adulteration or deterioration of the product.

Authentication Libraries and Databases: Reference libraries and databases containing information on botanical characteristics, chemical profiles, and DNA sequences of medicinal plants are valuable resources for authenticating herbal drugs and detecting adulterants.

Physical Evaluation

Determination of Foreign Organic Matter

Drugs should be free from moulds, insects, animal, faecal matter and other contamination such as earth stones and extraneous matters. Foreign organic matter should be not more than 2% W/W.

Determination of Ash Value

Total Ash: Total Ash is designed to measure the amount of

inorganic impurities present in the crude drug. The drug material is subjected to incineration at a temperature of about 500-6000C to remove all the carbons. Total ash usually consists of carbonates, phosphates, silicates and silica.

Acid Soluble Ash: Acid insoluble Ash is the residue obtained after extracting the total ash with HCl. It gives an idea about the earthy matter present in the drug.

Water Soluble Ash: The total ash content which is soluble in water is known as water soluble ash. It gives an idea about the presence of water-soluble salts present in the drug.

Determination of Extractive Value: It gives an idea about the number of chemical constituents present in the drug. Extractive value is again sub classified based on the nature of constituents present in the drug as water soluble extractive, alcohol soluble extractive and non-volatile ether soluble extractive value.

Determination of Moisture Content: 10gm of drug is taken in an evaporating dish. Then it is dried at 1050C for 3 hours and weighed again. Drying and weighing is continued for an hour interval until difference between two successive weighing corresponds to not more than 0.25 percent. The reading is taken after a constant weight is reached and the moisture content is determined.

Refractive Index: When a ray passes from one medium to another of different density, it is bent from original path. Thus, the ratio of velocity of light in vacuum to its velocity in a substance is termed as refractive index of the second medium. Depending upon purity, it is constant for a liquid and can be consider as one of its standardization.

Cosmeceuticals

Cosmeceuticals are cosmetic products with bioactive ingredients purported to have medical benefits. In America, there are no legal requirements to prove that these products live up to their claims. The name is a portmanteau of "cosmetics" and "pharmaceuticals". In the realm of natural organic skincare, the term "cosmeceutical" is becoming more prevalent. The term designates a product that combines cosmetics and medications. In essence, a cosmeceutical is a skincare item that includes a physiologically active ingredient that is supposed to have medicinal effects on the skin [21-23]. Cosmeceuticals will contain active ingredients that are known to be beneficial to humans in some way, "For example, vitamin C is a known antioxidant and when this is added to a lotion or cream the product is considered a cosmeceutical."

➤ Ten ways that Cosmeceuticals work

Sr. No.	Mechanism of Action	Examples
1	Activate a receptor	Retinoids, Tretinoin, Retinol
2	Enhance Barrier Function	Moisturizers based on Petrolatum, Silicone, Mineral oil, Glycerin
3	Increase exfoliation	Salicylic acid
4	Normalize cellular repair	Copper peptides
5	Decrease inflammation	Green Tea
6	Inhibit oxidation	Lactobionic acid, Vitamin E
7	Provide a cellular messenger	Pentapeptides
8	Regulate cellular communication	Hexapeptides
9	Modulate pigmentation	Avobenzone, micronized titanium dioxide
10	Deliver photo-protection	Avobenzone, micronized titanium dioxide, and microfine zinc oxide

Classification of Herbal Cosmetics [24]

Dosage Form

- Emulsion like Cold Cream, Vanishing Cream, Liquid Cream
- Powders like Face Powder, Talcum Powder and Tooth Powder
- Cakes like Rough Compacts, Made up Cakes
- Oils like Hair Oils
- Mucilage like Hand Lotion
- Jellies like Hand Jellies, Wave Set Jellies, Brilliantine Jellies
- Suspension like Cosmetic Stockings
- Paste like Toothpaste, Deodorantpaste
- Solution like After Shave Lotion, Hair Set Lotion
- Soaps like Shampoo Soap, Shaving Soap and Toilet Soap

Part or Organ of the Body to be Applied

- Herbal cosmetics for the Skin like Powders, Creams-solid and liquid, Lotions, Deodorants, Make up, Suntan preparations, Bath and cleansing preparations [25].
- Herbal cosmetics for the Hair like Shampoos soap and soap less, Tonics, Hair dressings and brilliantine's, Hair waving preparations, Beard softeners, Shaving media, Depilatories [25].
- Herbal cosmetics for the Nails like Nail polishes, Nail polish removers, Manicure preparations
- Herbal cosmetics for teeth and Mouth like Dentifrices, Mouth washes
- Borderline and Kindred Products like Eye preparations, Foot powders and applications, Miscellaneous product.

Skin Care Products

Skin is constantly exposed to dirt, microbes, irritants, radiation and toxins which can affect the skin in many

ways. Hence to protect the skin cleanse it and restore the tone, smoothen it and prevent Tanning, wrinkle and scar formation, various preparations are used which are enlisted [25,26].

- **Skin cleansers:** Milk, cucumber
- **Moisturizers:** *Aloe-vera*, almond oil, rose
- **Nourishers:** Honey, carrot peach wheat germ oil.
- **Antiseptics:** Neem, turmeric, tulsi, lavender oil.
- **Soothing agents (Emollients):** Sesame oil, almond oil, *aloe-vera*
- **Sunscreens:** *Aloe-vera*, chamomile, calendula, cucumber
- **Anti-Wrinkle & anti-Aging:** peach, liquorice, papaya, *aloe-vera*, apricot, turmeric
- **Anti-Acne:** cucumber gel, vetiver

Hair Care Products

Hair complexion, color and style play an important role in people's physical appearance. Hair care preparations are applied topically to the scalp and hair. These contain ingredients which either clean, condition or nourish the hair or prevent dandruff formation. The following are the various hair care products [27,28].

- Detergents examples are Soap nut, shikakai, reetha.
- Conditioners examples are Henna, amla, *hibiscus*, rosemary, tea
- Nourishers examples are brahmi, bringraj, eggs, coconut oil, sesame oil
- Hair colorants for example henna
- Hair growth promoters examples are Brahmi, *hibiscus*, coconut oil, amla, sesame oil
- Anti-dandruff ingredient example is soap nut, shikakai, lemon, thyme, *Aloe-vera*

Oral Care (Hygiene) Products

Oral care products like tooth pastes, powder, mouth wash,

mouth fresheners etc. Various herbs and their extracts are incorporated into these preparations in order to achieve antimicrobial, antiseptic, anti-plaque, anti-inflammatory and mouth freshening properties. For examples Neem, mentha, chamomile, sage, myrrh, nutmeg, chitosan, calendula. Herbal toothpaste typically contains ingredients like neem, clove, peppermint, and tea tree oil, which help fight bacteria, prevent plaque build-up, and freshen breath [29]. Neem has antibacterial properties, while clove and tea tree oil have analgesic and antiseptic effects. Peppermint provides a refreshing flavour and helps maintain oral hygiene. Herbal tooth powders are a traditional alternative to toothpaste and typically contain ingredients like baking soda, salt, and powdered herbs such as sage, myrrh, or cinnamon. These ingredients help clean teeth, neutralize acids, and promote healthy gums. Herbal oral rinses or gargles are made from herbal extracts like calendula, Echinacea, or goldenseal, which have antibacterial, antifungal, and anti-inflammatory properties. They can help soothe sore throats, reduce inflammation, and promote oral health [30,31].

Other Cosmetics

These are used to prepare various cosmetic products like lipstick, nail polishes and eye products. For examples Anthocyanins, saffron, turmeric, carotenoids, indigo, capsicum, chlorophyll

Perfumes for examples Volatile oils of plants like rose, lavender, jasmine, sandalwood

Talcum powders: It contains talc with added plant extracts to impart the desired flavour and odours. For examples sandalwood, rose, jasmine, lavender, etc.

Study of Drugs Used in Cosmetics

Soapnut (Ruth)

It consists of pods of *Sapindus trifoliatus*, *Sapindus mukorassi* belonging to the family *Sapindaceae*. It is a shrub with linear pods; the dried powder of the pods is brown in Colour and has soap like properties. It contains saponins (10-11.5), mucilage, gums, proteins. Saponins contain sapindosides A, B, C and D, diosgenin, gitogenin, chlorogenin and rusogenin. It is used as detergent, hair cleanser, hair growth promoter and Antidandruff agent. Soapnuts contain saponins, which are natural surfactants that produce lather when agitated in water. This lather has cleansing properties and can effectively remove dirt, oil, and stains from various surfaces, including fabrics, skin, and hair. Soapnut, also known as reetha or aritha, is a natural cleaning agent derived from the fruit of the soapnut tree (*Sapindus spp.*), which is native to parts of Asia, including India and Nepal. In traditional medicine systems such as Ayurveda, soapnuts are believed to have medicinal properties and are used to treat various health conditions, including skin disorders, digestive issues, and respiratory problems [32].

Amla (Indian gooseberry)

Amla, also known as Indian gooseberry or *Emblca officinalis*, is a fruit that has been highly valued in traditional Indian medicine systems such as Ayurveda for its numerous health benefits. It consists of dried and fresh fruits of *Phyllanthus emblica* belonging to the family *Phyllanthaceae*. It is a small tree with a number of globular fruits which are yellowish Green in colour. They have a sour and astringent taste. It is a rich source of ascorbic acid (Vitamin C), other constituents include Tannins, minerals such as iron, calcium, phosphorous. It is also rich in pectin. Amla is used as a hair growth promoter, hair nourisher hair conditioner and colorant. Amla is renowned for its potent antioxidant properties, primarily attributed to its high vitamin C content. Antioxidants help neutralize free radicals in the body, which can contribute to oxidative stress and damage to cells and tissues. The high vitamin C content in amla makes it beneficial for supporting the immune system. Regular consumption of amla may help reduce the risk of infections, colds, and flu, and promote overall immune function. Amla is known to support digestive health and alleviate digestive issues such as constipation and indigestion. It acts as a natural laxative and helps regulate bowel movements [33,34]. Amla is also believed to stimulate the secretion of digestive enzymes, promoting better digestion. Amla is commonly used in hair care products such as hair oils, shampoos, and conditioners. It is believed to nourish the scalp, strengthen hair follicles, and promote hair growth. Amla oil is also used as a natural remedy for preventing premature graying and reducing hair loss. Amla is beneficial for skin health due to its antioxidant and anti-inflammatory properties. It helps protect the skin from oxidative damage caused by environmental factors such as UV radiation and pollution. Amla extracts are used in skincare products to promote a youthful complexion and reduce signs of aging [35,36].

Henna (Mehndi)

It consists of fresh and dried leaves of *Lawsonia inermis* belonging to the family *Lythraceae*. It is a flowering plant and its leaves are used to color and decorate the skin and hair. Henna contains a soluble component known as lawsone. It is responsible for the colour. It also contains xanthenes, tannins, flavonoids and coumarins. Henna is used as hair colorant, hair dye, hair conditioner and nourisher. It produces a cooling effect on the skin. It is also used to treat burns and wounds [36,37].

Hibiscus (Jaswand)

It consists of dried flowers and leaves of *Hibiscus Rosa sinensis* belonging to the family *Malvaceae*. Red and white varieties are generally used in hair care preparations. It contains Vitamins, flavonoids, anthocyanins, quercetin, mucilage and Albumin. It is used as hair growth promoter,

anti-greying agent, hair conditioner, Hair rinser. It gives smoothness and shine to the hair. *Hibiscus* flowers contain a variety of antioxidants, including flavonoids, phenolic compounds, and anthocyanins. These antioxidants help neutralize free radicals in the body, reducing oxidative stress and inflammation. *Hibiscus* extracts are used in skincare products for their moisturizing, exfoliating, and anti-aging properties. *Hibiscus* is rich in alpha hydroxy acids (AHAs), which help exfoliate the skin, promote cell turnover, and improve skin texture and tone. *Hibiscus* is also used in hair care products for its nourishing and conditioning properties. *Hibiscus* extracts help strengthen hair, prevent breakage, and promote healthy hair growth. *Hibiscus* oil or *hibiscus*-infused hair treatments are used to improve hair health and shine [38,39].

Tea (Chai)

It consists of dried leaves of *Thea sinensis* and *Camellia sinensis*. Belonging to the family Theaceae. The leaves are collected, dried and made into the form of tea dust. Tea contains polyphenols, catechin epicatechin, caffeine, theophylline, Theobromine. It is used as hair conditioner, colorant. It gives Smoothness and shine to hair [40].

Aloe (Kumari)

It consists of dried or fresh mucilage of *Aloe Vera* belonging to the family Liliaceae. It contains anthraquinones like rhein, aloin, eosin, minerals and mucilage. Chemically mucilage is a polysaccharide consisting of salts of poly uronic Acids. Aloe has good wound healing properties. It is used in skin care and hair care cosmetics, it is used to treat radiation burns and it is also used as a hair conditioner and nourisher. Aloe is used as an ingredient in various sunscreen c and skin moisturizer Creams. Aloe Vera gel is well-known for its soothing and moisturizing properties, making it a popular ingredient in skincare products such as lotions, creams, gels, and ointments. It helps hydrate the skin, soothe irritation, reduce inflammation, and promote wound healing [41]. Aloe Vera is used to treat sunburns, minor cuts, burns, insect bites, and various skin conditions such as eczema and psoriasis. Aloe Vera is also beneficial for hair health. Aloe Vera gel can be applied topically to the scalp and hair to moisturize, nourish, and strengthen hair follicles. It helps reduce dandruff, soothe scalp irritation, and promote healthy hair growth. Aloe Vera is often used in shampoos, conditioners, and hair masks for its conditioning and revitalizing effects [42].

Liquorice (*Glycyrrhiza*)

It consists of dried roots and stolons of *Glycyrrhiza glabra* belonging to the family Leguminosae. Liquorice contains saponin glycosides, glycyrrhizin. It also contains flavonoids, liquiritin and isoliquiritin. The ammonium and sodium salts of glycyrrhizic acid are widely used in cosmetics. It has

skin improving properties hence used in skin care cosmetics. Licorice extract is used topically in skincare products for its anti-inflammatory, antioxidant, and skin-lightening properties. It helps soothe irritated skin, reduce redness and inflammation, and fade dark spots and hyperpigmentation [43,44].

Turmeric (*Curcuma*)

It consists of dried and fish rhizomes of *Curcuma longa*. Belonging to the family Zingiberaceae. It contains volatile oils, resins, curcuminoids like curcumins. Antiseptic and anti-inflammatory, skin conditioning and antioxidant Properties. It is used in skin care cosmetics. Turmeric is known for its skin-brightening properties. It helps even out skin tone, reduce hyperpigmentation, and fade dark spots and blemishes. Turmeric-based herbal cosmetics, such as face masks, serums, and creams, help achieve a radiant and luminous complexion. Curcumin, the active ingredient in turmeric, is a powerful antioxidant that helps neutralize free radicals and protect the skin from oxidative damage. Turmeric is used in herbal cosmetics to combat signs of aging, such as wrinkles, fine lines, and age spots, by promoting collagen production and improving skin elasticity [45,46].

Turmeric helps regulate sebum production and control excess oiliness in the skin. It is beneficial for individuals with oily or combination skin types, as it helps mattify the skin, minimize pores, and reduce shine. Turmeric-based herbal cosmetics help maintain a balanced and healthy complexion. Turmeric is an effective natural remedy for acne treatment and prevention. It helps unclog pores, reduce inflammation, and kill acne-causing bacteria, resulting in clearer and smoother skin. Turmeric-based face masks, cleansers, and spot treatments are used to combat acne breakouts and minimize acne scars. Turmeric promotes overall skin health and vitality, giving the skin a natural radiance and glow. Regular use of turmeric-based herbal cosmetics helps nourish, hydrate, and rejuvenate the skin, leaving it soft, supple, and luminous [47,48].

Sandalwood

It consists of heart wood of *Santalum album*. Belonging to the family Santalaceae. The wood is obtained from main stem and branches. It is collected from adult 25 years old trees. It contains volatile oils, which contain 95% of two isomeric sesquiterpene Alcohols namely an alpha and beta santalol. It also contains santalal, santene, santanone, santalone and santalene. Sandalwood is used in perfumery, as skin conditioner, in creams, lotions Soaps and powders [49,50].

Bees Wax

It is the purified wax obtained from honeycomb of bees *Apis mellifera*. Belonging to the family Apidae. It contains esters

monohydric alcohols, myricin, myricyl palmitate, Cerotic acid, mellisic acid and an aromatic substance cerolein. It is used in the preparation of ointments, plasters, cosmetic, creams [51].

Sesame Oil

It is a fixed oil obtained from *Sesamum indicum*. Belonging to the family Pedaliaceae. It contains glycerides of fatty acids, mainly oleic, linoleic, palmitic, stearic and arachidic acids. It also contains phenol, sesamol. It is used as nutritive softening agent (emollient), Used in manufacture of soaps, ointments and pastes [52].

Conclusion

As concerns about the harmful effects of food processing and overuse of medication increase, herbs play a vital role in contemporary medicinal formulations. These days, they are used more and more in cosmetics, foods, teas, and alternative medications. The expanding push towards lifestyle modifications, which is motivated by the idea that plants have a tremendous amount of potential for use as therapeutic agents, is reflected in the growing interest in herbs. It seems that diverse cultures and traditions have a strong tradition of using medicinal herbs. Numerous plants are now known to be used by humans as beauty ingredients and a treatment for dermatological conditions as a result of our current study. It's interesting to note that some plants have qualities that can be used for both beauty and therapeutic purposes.

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