



# HERBAL COSMETICS: A SAFE AND EFFECTIVE APPROACH

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## **1) ABSTRACT:**

India is a focus for development of Ayurveda, Unani, Siddha, Homoeopathy and another natural herbs based health science (AYUSH) Ayush Pharmaceutical industry having great possible and contingency for saundarya prasadka category (herbal cosmetic) development in future. Natural beauty is blessing and cosmetics help in presenting and increasing the beauty and personality aspects of human beings. Saundarya prasadak are the preparation, which represent cosmetic base correlate with known Ayurveda, Siddha and Unani (ASU) drugs active ingredient (which reference are readily available in schedule 1st book of Drug and cosmetic act 1940 and rule 1945) In traditional era people were used to various lepa, Alepa, Pralepa, Udavartan, Prakshalan etc for saundarya prasadan karma. Nature has offered the way to keep up that parity. Herbs! Yes herbs are one such means. An herb is a plant or plant extract, including leaves, bark, berries, roots, gums, seeds, stems and flowers which are favour with nourishing and healing elements. Cosmetics alone are not competent to take care of skin and others body parts, it requires association of active ingredients to check the casualty and ageing of the skin. Herbal cosmetics have improved much popularity among the population. Herbal cosmetics products claimed to have efficacy and intrinsic acceptability due to routine use in daily life and avoid the adverse effects which are commonly seen in synthetic products.

Numerous herbal plants available naturally which are having different chemical constituents used in cosmetics preparations. This review focused on cosmeceuticals intended to enhance the health and beauty of the skin. The isolated compounds from herbal plants like coconut oil, olive oil, sunflower oil, jojoba oil, aloe vera were studied for their dry skin treatment. The herbs like carrot, ginkgo and Rhodiola rosea were studied for their anti-aging property. Herbal like green tea, calendula and turmeric were studied for their skin protection capacity. Herbal plants like henna, neem and shikakai were studied for their anti-dandruff treatment and also studied the antioxidant property of some vitamins. The results obtained from the study, proved that the herbal plants are safe and effective. Herbs are rich in vitamins, they have anti-aging, revitalizing and rejuvenating agent. Herbs produce anti-fungal, anti-bacterial and pain relieving that can treat dandruff. The plants produce anti-septic, anti-inflammatory, anti-oxidant and insect repellent, helps in wound healing and skin protection. The current review highlights the importance of herbal cosmetics, the herbs used in them and their advantages over the synthetic counterparts. The present study revealed that herbal cosmetics are safe and does not produce any adverse reactions compare to synthetic cosmetics products.

**Keywords:** Herbal cosmetics, Skin care, Aloe vera, Coconut oil, Olive oil, Jojoba oil, Turmeric, Home grown beauty care products, Skin care, Hair care, Herbal cleansers, Herbal aromas, different added substances. etc.

## **2) INTRODUCTION**

The word cosmetic was derived from the Greek word "kosm tikos" meaning having the power, arrange, skill in decorating [1]. Herbal cosmetics are the products in which herbs are used in crude or extract form.[2] The concept of beauty and cosmetics dates back to ancient mankind and civilization. Generally herbal cosmetics are also referred to as natural cosmetics. Herbal cosmetics are formulated, using different cosmetic ingredients to form the base in which one or more herbal ingredients are used to cure various skin ailments. Plants are highly used for development of new drug products for cosmeceuticals and pharmaceutical applications [3]. The term cosmeceuticals was first used by Raymond Reed founding member of U.S society of cosmetics chemist in 1961. He actually used the word to brief the active and science bases cosmetics. The above term was further used by Dr. Albert Kligman in the year 1984 to refer the substances that have both cosmetics and therapeutic benefits.[4] Herbal cosmetics (saundaryaprasadka) allow every individual to feel beautiful & healthy about themselves. The concept of beauty and cosmetics is as ancient as mankind and civilization. Beauty is the desire of every individual to give pleasure to the sense. Beauty is not always related to women rather men are beauty conscious as well. Natural beauty is blessing and cosmetics help in presenting and increasing the beauty and personality aspects of human beings. Saundaryaprasadak is the preparation, which represents cosmetic base correlates with known [Ayurveda](#). Indian herbs and their significance are popular worldwide. An herbal cosmetic has a growing demand in the world market and is an invaluable gift of nature. Herbal formulations always have attracted considerable attention because of their good activity and having no side effects. Herbs and [spices](#) have been used in maintaining and enhancing human beauty. There is a huge variety of the herbal cosmetics that are produced and used for daily purposes like herbal oil, shampoos & conditioners for hair, herbal soaps for skin; herbal face wash and many more. The best thing about herbal cosmetics is that it is purely made by the herbs and shrubs. The natural content in the herbs does not have any reactions on the human body; rather enhances the body with supplements and other helpful minerals. [5]

**2.1:Present Status:** Herbalists today, believe to help people build their good health with the help of natural sources. Herbs are considered to be food rather than medicine because they're complete, all natural and pure, as nature intended. When herbs are taken, the body starts to get cleansed, it gets purifying itself. Unlike chemically synthesized, highly concentrated drugs that may produce many side effects, herbs can effectively realign the body's defence. Herbs do not produce instant cures, but rather offer a way to put the body inproportune with nature for thousands of years, humans have used herbs. Herbs have been used in the following ways - In cooking for flavouring foods, as perfumes, as disinfectants, to protect us against germs, as medicines to heal when we are sick [19].

## **3) ADVANTAGES OF HERBAL COSMETICS OVER SYNTHETIC:**

Herbal cosmetics are the latest, a safe and effective trend in the field of beauty and fashion. These Herbal Cosmetics are gaining popularity as nowadays most people prefer natural products over chemicals for their personal care to enhance their beauty as these products supply the body with nutrients and enhance health and provide satisfaction as these are free from synthetic chemicals.[5].

### **1.Naturally available.**

Herbal cosmetics are made by herbs which are easily available from nature; they are free from all the harmful synthetic chemicals. Although herbal cosmetics prepared by naturally available plant parts and plant extracts, they may as effective as synthetic product. e.g. aloe-vera gel and coconut oil. They also consist of natural nutrients like Vitamin E, Vitamin C that beautify skin and provide nourishment to the skin. For example, Aloe vera is an herbal plant species belonging to liliaceae family and is naturally and easily available <sup>10</sup>. There are number of consumers

concerned about toxic synthetic chemicals, mineral oils which is may use as ingredients in many cosmetics. They demand more natural products with traceable and more natural ingredients, free from harmful chemicals and effectiveness.[6]. As the name suggests that herbal cosmetics are natural. They are free from all the harmful synthetic chemicals which are proven to be toxic for the skin of a person. Different parts of the plant and plant extracts are used in herbal products. They also consist of natural nutrients like Vitamins and minerals that keep skin healthy, glowing and lustrous. There exist a large variety of herbal extracts, to name a few *Andrographis paniculata* (Kalmegh), *Asparagus racemosus* (*Shatavari*), *Boswellia Serrata* (SalaiGuggal), Asphalt (*Shilajit*), *Aloe Vera* (*Aloe Barbadosensis*) and many more. [5].

## 2.Safer to use .

toxic, tested and proven by dermatologists to be safe to use. Since they are made of natural ingredients. Compared to other beauty products, natural cosmetics are safe to use. They are hypo-allergenic and tested and proven by dermatologists to be safe to use anytime, anywhere. Since they are made of natural ingredients, people don't have to worry about getting skin rashes or experience skin itchiness. Example - BHA (Butylated Hydroxyanisole) and BHT (Butylated Hydroxytoluene) are closely related synthetic antioxidants and are used as preservatives in lipsticks and moisturizers [7]. BHA and BHT can induce allergic reactions in the skin [8]. The international Agency for Research on Cancer classifies BHA as a possible human carcinogen [9]. Herbal cosmetics contain natural antioxidants like vitamin C [10]. Herbal cosmetics are the safest and most effective. They are generally hypo-allergenic which means that they do not cause any type of skin allergies as caused by other harmful products. The chemical cosmetics are not safe because they contain synthetic cosmetics which can cause certain allergic reactions. On the other hand, herbal cosmetics contain natural antioxidants that are safe for the skin.[14].

## 3.Compatible with all skin types.

Natural cosmetics are suitable for all skin types. No matter if you are dark or fair, you will find natural cosmetics like foundation, eye shadow, and lipstick which are appropriate irrespective of your skin tone. Women with oily or sensitive skin can also use them and never have to worry about degrading their skin condition. Coal tar-derived colors are used extensively in cosmetics, Coal tar is recognized as a human carcinogen and the main concern with individual coal tar a color (whether produced from coal tar or synthetically) is they can cause cancer [11]. But natural colors that are obtained from herbs are safer.) There are mainly 5 skin types namely; oily, dry, normal, combination, and sensitive. Herbal ayurvedic cosmetic products are suitable for all skin types. It can be used by anyone and it won't damage their skin.[14].

## 4.Cruelty free.(not tested on animals)

Some cosmetics are initially tested on animals to ensure that they are safe and effective to use for human. However, natural cosmetics need not be tested on animals. These natural formulations are tested by experts in laboratories using state of the art equipment with no animals involved [12].

## 5.No side effects.

The synthetic beauty products can irritate your skin, and cause pimples. They might block your pores and make your skin dry or oily. With natural cosmetics, one need not worry about these. The natural ingredients used assure no side effects; one can apply them anytime, anywhere. For example herbal cosmetics are free from parabens that are the most widely used preservative in cosmetics and can penetrate the skin [13]. Synthetic beauty products have various side effects. They can clog your pores, cause irritation, make your skin dry or oily but herbal products are free from such side effects. Also, herbal products do not contain parabens which are often a reason for probable side effects. Furthermore, they do not cause any internal body harm because these are made up of natural products. They deeply purify the skin without causing any harmful effects.[14].

## 6.Natural fragrance.

The aroma of cosmetics has a huge role to play. A good fragrance can relax and calm you as well as your skin. Since *herbal ayurvedic cosmetic products* do not contain toxic chemicals, they do not have a toxic smell as well. All the herbal products are formed from natural herbal extracts. So, they owe their natural fragrance.[14].

## 7. Economical to use.

Natural cosmetics are not that expensive. In fact, some of these products are more affordable than synthetic ones. They are offered at discounted prices and are sold for a cheap price during sales. Just need to survey enough to look for great deals. An estimate of WHO demonstrates about 80% of world population depends on natural products for their health care, because of side effects inflicted and rising cost of modern medicine. World Health Organization currently recommends and encourages traditional herbal cures in natural health care programs as these drugs are easily available at low cost and are comparatively safe[15].

## 4) Regulatory Status:

The legal difference between a cosmetic and a drug is determined by a products intended use. Under present concept, the boundary at which a cosmetic product becomes drug is not well-defined and different laws and regulations apply to each type of product. The drugs and cosmetic Act 1940 defines a drug and a cosmetic as; Drug- "All medicines for internal or external use of human beings or animals and all substances intended to be used for; or in the diagnosis, treatment, mitigation or prevention of any disease or disorder in humans or animals". Cosmetic- "Any article intended to be rubbed, poured, sprinkled or sprayed on or introduced into or applied to any part of the human body for cleansing, beautifying, promoting attractiveness or altering the appearance and includes any article intended for use as a component of cosmetic" [20,21].

Some products meet the definitions of both cosmetics and drugs. This may happen when a product has more than one intended uses. For example, a shampoo is a cosmetic because its intended use is to clean the hair. An anti-dandruff shampoo is a drug because its intended use is to treat dandruff. Among the cosmetic/drug combinations are toothpastes that contain fluoride, deodorants that are antiperspirants and moisturizers with sun-protection claims. The claims made about drugs are subject to detailed analysis by the Food and Drug Administration (FDA) review and approval process, but cosmetics are not subject to mandatory FDA review. Although there is no legal category called cosmeceuticals, the term has found application to designate the products at the border line between cosmetics and pharmaceuticals[22].

Federal Food, Drug and Cosmetic Act do not recognize the term itself. It is also often difficult for consumers to determine whether „claims“ about the actions or efficiency of cosmeceuticals are valid unless the product has been approved by the FDA or equivalent agency. Some countries have the classes of products that fall between the two categories of cosmetics and drugs: for example, Japan has „Quasi-drugs“; Thailand has „controlled cosmetics“ and Hong Kong has „cosmetic-type drugs“. The regulations of cosmeceuticals have not been harmonized between the USA, European, Asian and other countries [23].

## 5) COSMECEUTICALS

**Cosmeceuticals** are [cosmetic](#) products with [bioactive](#) ingredients purported to have medical benefits. In the US, there are no legal requirements to prove that these products live up to their claims. The name is a [portmanteau](#) of "cosmetics" and "[pharmaceuticals](#)". **Nutricosmetics** are related [dietary supplement](#) or food or beverage products with [additives](#) that are marketed as having medical benefits that affect appearance.[16].

Cosmeceuticals represent a new category of products placed between cosmetics and pharmaceuticals that are intended for the enhancement of both the health and beauty of skin. Encompassing an ever-increasing part of the skin care industry, cosmeceuticals are formulated from a multitude of ingredients, the main categories of which are discussed in this article. Given the growing interest in these products among patients and the strong claims made by manufacturers, it is important that physicians recognize these agents and understand their benefits, limitations, and potential adverse effects[17].

The American population is becoming older and more affluent than ever. With many people willing to trade wealth for youth, there has been a surge in demand for high-end anti-aging products, and the skin care industry has responded in force. Moving beyond traditional cosmetics—which only temporarily adorn and beautify the skin—cosmetics

companies have tapped into the biomedical revolution, adding biologically active ingredients to their products that enhance the function of healthy skin. Because these products are not intended to improve or to cure diseased skin, they have avoided pharmaceutical regulation and scrutiny. Thus, “cosmeceuticals” blur the line between drug and cosmetic, doctor and aesthetician, and patient and consumer.

Patients can flounder in the flood of new products, finding it difficult to select the right product and becoming frustrated when a product fails to produce its beneficent effect. Patients remain enthusiastic about these products, however, and seek their physician’s help in choosing the best products available. Physicians educated in these cosmeceuticals can serve their patients by:

(1) managing expectations to realistic, evidence-based effects and ,(2) warning against and monitoring for potential side effects.

There remains much controversy surrounding the “active ingredients” found within cosmeceutical products, particularly in regards to their mechanism of action, formulation, optimal concentration, penetration and retention in skin. Some clinical trials and tests have been done to address these questions, but on the whole there is little validation to support cosmeceutical claims. In vitro testing for some products has shown that these ingredients do have a protective and repairing effect on aging skin; however, there has been little translation of this evidence into in vivo testing to determine the possibility of delivering adequate doses to skin that will produce clinical or histologic results.[17].

## 5.1);Vitamins

Many cosmeceutical agents are developed and advertised for prevention and treatment of aging skin, particularly photoaging skin. Photoaging refers to the damage that is done to the skin from prolonged exposure, over a person’s lifetime, to solar UV radiation. While the most important protective measure against photoaged skin is the daily application of UVA and UVB sunscreen, potential treatment options for already damaged skin involve the use of topical antioxidants and compounds that help repair DNA and stimulate collagen synthesis. Topical vitamins are substances that are purported to provide some of these benefits.[17].

## 5.2):Hydroxy Acids

The hydroxyacids—comprised of the  $\alpha$ -hydroxyacids,  $\beta$ -hydroxyacids, polyhydroxyacids, and bionic acids—represent a class of compounds with unprecedented cosmetic benefits. The most well-known and commonly used is the  $\alpha$ -hydroxyacid glycolic acid for its proven antiaging benefit and ability to improve hyperpigmentation and acne-prone skin. Both the  $\alpha$ -hydroxyacids and  $\beta$ -hydroxyacids work by removing or decreasing hyperkeratinized skin and restoring the epidermis, making them useful for treatment of dry skin, verrucous growths, and ichthyosis.[18].

### Preparations of Cosmetics

The cosmetics formulations are mainly divided into three categories;

1. Solid
2. Semi solid
3. Liquids

Talcum powders, Face powders, face packs, masks etc. are included in solid category.

Creams, liniments, ointments, wax base creams etc. are included in semi-solid category.

Lotions, hair oil, moisturizers, conditioners, cleansing milk, shampoos, mouthwashes, liniments, deodorants, sprays, etc. are included in liquid category.[24].

### 5.3):What are the layers of the skin?

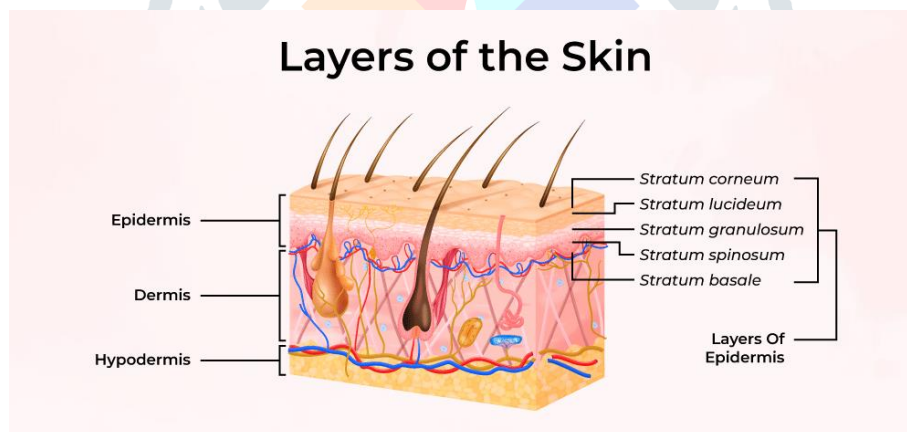
Three layers of tissue make up the skin:

- Epidermis, the top layer.
- Dermis, the middle layer.
- Hypodermis, the bottom or fatty layer.

**BASIC SKIN CARE:** It constitutes the first line of defence, skin contains many cells and structures, it is divided into three main layers Epidermis: outermost layer varies in thickness in different regions of body. Provide waterproof barrier and create our skin tone. Epidermis is divided into five layers. Keratinocytes are cells in the stratum basal that produce and store the protein keratin. Keratin is a fibrous protein that provides hardness and water resistance to hair, nails, and skin. Keratinocytes are cells in the stratum basal that produce and store the protein keratin. Keratin is a fibrous protein that provides hardness and water resistance to hair, nails, and skin. The Merkel cell is in charge of stimulating sensory nerves. Melanocytes generate the pigment melanin, which provides skin its colour, and they also protect epidermal living cells from UV radiation. The cell processes that connect the cells through desmosomes give the stratum spinosum its spiky look. The epidermis' smooth, transparent layer is known as the stratum lucidum. The most superficial layer, the stratum corneum, is exposed to the outer world. Keratin is a fibrous protein that provides hardness and water resistance to hair, nails, and skin. Hair follicles and sweat glands are found in the dermis, which is made up of strong connective tissue. Collagen, a protein responsible for skin strength and suppleness, is also present. Hypodermis: The hypodermis is a layer of fat and connective tissue underneath the epidermis. The body's acts as insulation.

**Functions of skin** • Protection • Sensation • Regulation of heat • Control of evaporation • Absorption • Water resistant [25].

#### Structure of skin:



(figure 1: structure of skin)

## 6) Applications of Herbal Products in Cosmetics :

Herbs play an important role in the field of cosmetic

- 1) **Herbal Skin Care Products:** Lavender body powder and body soap, Silk Soaps and Care Creams.
- 2) **Herbal Hair Care Cosmetics:** Herbal hair care cosmetics have a several ingredient e.g. Shikakai (Acacia concinna), Henna (Lawsonia inermis), Guar Gum (Cyamopsis tetragonolobus) Amla (Emblca officinalis), Brahmi (Bacopa monnieri)
- 3) **Herbal Lip Care Cosmetics:** Herbal Lip plumper, Herbal Lipsticks, Herbal Lip Balm and Herbal Lip Gloss.
- 4) **Herbal Eye Care Cosmetics:** Eye Shadow, Eye Gloss, Eye Make Up, Liquid Eye Liners Herbal Creams, Lotions, Gel: Creams: Rich Face and Hand Cream, Aloe Moisturizing Hand
- 5) **Herbal Oils:** Herbal oils are effective for baldness, falling of hair, thinning of hair, in treating irritation & Itching of scalp

6) **Herbal Perfumes & fragrances:** Citrus Fragrance: The light, fresh character of citrus notes (bergamot, orange, lemon, petitgrain, mandarin etc.) is often combined with more feminine scents (flowers, fruits and chypre) [26,27].

## **7) Raw materials used in herbal cosmetics :**

Oils, Waxes, Gums, Hydrophilic Colloids, Colours, Perfumes, Protective Agents, Bleaching Agents, Preservatives, Antioxidants And Other Auxillary Agents[28].

**7.1:Oils:** Oils are derived from vegetable and mineral sources, and are used in cosmetics. Examples of vegetable oils are almond oil, arches oil, castor oil, olive oil and coconut oil. Examples of mineral oils are light and heavy paraffin.

**a)Almond Oil:** It is a fixed oil obtained by expressing the seeds of Prunes amygdalus, Family Rosaceae, The oil is pale yellow in colour, with a characteristic odour. The active principles are mainly the mixture of glycoside with oleic acid, linoleic acid, myristic and palmitic acid. It has an emollient action, so it is used in the preparation of creams and lotions.

**b) Arachis Oil:** This is also a fixed oil obtained from the seeds of the Aarchishypogea belonging to the family Leguminoseae. The oil is pale yellow in colour, with a faint nutty odour. Refined groundnut oil is colourless, with active principles like oleic. Linoleic acid and a small amount of other acids. At 3°C, it is cloudy, at a lower temperature, it solidifies. It is used in the preparation of hair oils and brilliantines.

**c) Castor Oil:** Oil is obtained from the seeds of Ricinuscommunis belonging to the family, Euphorbiaceae. It has a slight odour; the oil is either yellow in colour or colourless. It consists of a mixture of glycosides, in which 80% of ricinoleic acid is the major constituent. At 0° C it forms a clear liquid. It is used as an emollient, in the preparation of lipsticks, hair oils, creams and lotions.

**d) Olive Oil:** This oil is obtained from the fruit of the Oleaeuropea, belonging to the family, Oleaceae. The oil is either pale yellow or greenish yellow in colour, it has a slight odour. It consists of the glycerides of oleic acid, palmitic, linoleic, stearic and myristic acids. At a lower temperature, it is solid or partly solid. It has emollient, soothing properties. It is used in the manufacturing of creams, lotions and bath oils.[29].

**e) Coconut Oil:** This oil is obtained from the dried solid part of the endosperm of the coconut - Cocosnucifera, family Palmae. It is a white or pearl-white unctuous mass in winter and colourless in summer.

**f) Light liquid paraffin:** It consists of a mixture of hydrocarbons in the form of an oily liquid which has no colour or odour. Viscosity and weight per ml (0.83-0.87g) are both low in light liquid paraffin. It is used in the manufacture of bath oils, hair oils, brilliantines, lotions and creams, due to its better spreadibility.

**i) Heavy liquid paraffin:** It is composed of a mixture of hydrocarbons in the form of a colourless and odourless oily liquid. Due to its soothing effect on the skin, it is used in creams, lotions, brilliantines, hair oils and bath oils. Heavy liquid paraffin is obtained from petroleum. [29].

**7.2: Waxes:** Waxes are the esters resulting from the condensation of high molecular straight chain fatty acids with high molecular straight chain monohydric alcohol of the methanol series. They are used in cosmetics as a base, along with oils and fats. Example: lipsticks. Commonly used waxes are briefly discussed below.

**a) Beeswax:** It is a purified wax separated from the honeycomb of bees, Apismellifera which belong to the Family, Apidae. Beeswax is composed of 70% ester myricylpalmitate. It is yellowish brown in colour, solid, with a honey-like odour. Under cold conditions it becomes brittle; when bleached, it becomes yellowish-white solid with a faint characteristic odour. The melting point of beeswax is 62°C-65°C. Beeswax helps in the incorporation of water to form an emulsion.

**b) Carnauba Wax:** This is obtained from the leaves of the Brazilian wax palm, Copernicacerifera, which belongs to the Palmae family. Carnauba wax is available in various grades. The highest grade is light-brown to pale-yellow in colour. It is in the form of moderately coarse powder or flakes, with a characteristic bland odour. The melting range of this wax is 81°C -86°C. It is a hard wax and is used in the manufacture of candles, wax varnishes, leather and furniture polishes.

**c) Paraffin Wax:** It is derived by the distillation of petroleum. It is a mixture of solid hydrocarbons consisting mainly of n-paraffins and, to some extent, their isomers. So, it also called hard paraffin wax. Physically, the paraffin wax is colourless, odourless or a white, translucent, wax-like solid, which is slightly greasy to touch. Paraffin wax melts at 50°C-57°C.

**d) Spermaceti:** It is a solid wax obtained from the head, blubber and ear case of the sperm whale, *Physeter colodon*, which belongs to the *Physeteridae* family. It consists mainly of cetyl palmitate and cetyl myristate spermaceti in a solid wax, which is a translucent crystalline, pearly-white, unctuous mass with little odour and taste. It melts at a specific gravity of about 0.94. Spermaceti is also available synthetically and is composed of a mixture of esters of saturated fatty alcohols and saturated fatty acids. Synthetic spermaceti is available as white to off-white translucent flakes with a crystalline structure and a pearly lustre. The melting range of synthetic spermaceti is 43°C-47°C.

### 7.3: Colours:

Colours have been used in cosmetics, since time immemorial, by human beings. Basically, the desire to buy a cosmetic product is controlled by three senses, namely, sight, touch and smell. So color is one of the most important ingredients of cosmetic formulations. Color is a visual sensation which can be caused by a definite wavelength or a group of wavelengths by an object through one or more of the following phenomena - emission, reflection, refraction or transmission. Natural colours such as cochineal, saffron and chlorophyll are discussed in brief here. <sup>[30]</sup>

**a) Cochineal:** Cochineal is a red dyestuff derived from the dried female insect, *Dactylopius coccus*, which belongs to the *Coccidae* family. Carminic acid is the main colouring constituent in cochineal. On crystallization, carminic acid forms red needles and at 130°C, the needles darken and also carbonize at 250°C. For the preparation of carmine, the cochineal is extracted with water. Alum is added to this solution to precipitate the red aluminium salt called carmine lake.

**b) Saffron:** It consists of the stigmas and tops of the styles of the plant, *Crocus sativa*, which belongs to the *Iridaceae* family. It is a perennial plant grown in Jammu and Kashmir in India. Saffron powder is yellowish and is easily soluble in water, so it is used as a flavouring and colouring agent in food preparations. Saffron contains a number of carotenoids - crocin is an important natural saffron carotenoid. Picrocrocin is a colorless bitter glycoside responsible for saffron's characteristic odour.

**c) Chlorophyll:** It is the natural green pigment, found abundantly in nature. It is the component that is responsible for photosynthesis.

**d) Rose:** It is obtained by the steam distillation process from the flower petals of *Rosmarinus officinalis* which belongs to the *Labiatae* family. For obtaining rose oil, the blossoms are collected before they open, a little before sunrise.

**e) Jasmine Essential Oil:** Obtained from the flowers of *Jasminum grandiflorum* which belongs to the *Oleaceae* family, the oil is obtained by the solvent extraction method and its essence is used in the perfumery industry.

**f) Lavender:** It is obtained from the flowers and stalk of *lavandula officinalis* which belongs to the *Labiatae* family.

**g) Tuberose:** The nickname of the tuberose is "mistress of the night". The oil is a brown, viscous liquid with a sweet, heavy and sensuous scent.

**h) Geranium:** This oil is obtained from the flowers, leaves and stalks of the *Pelargonium graveolens*, which belongs to the *Geraniaceae* family. Its essence is obtained by the distillation process, from the flowers and stems of the plant. The geranium is known as geranium bourbon.

**i) Champa:** It is obtained from the flowers of the *Micheliachampaka*. The colour of the flower is yellow to deep orange.

**j) Cinnamon:** Cinnamon oil is obtained from the different parts of the cinnamon tree - its leaves, bark and roots. *Cinnamomum zeylanicum* belongs to the family, *Lauraceae*. The oil obtained from the bark is most valuable. The oil has a warm, spicy and sweet character.



**k) Neroli:** It is an essential oil obtained through the distillation process from the flower of the bitter orange tree. It can be stored in amber-coloured bottles in the refrigerator.

**l) Clove:** It contains essential oils, obtained from the buds of the *Eugenicarryophylus*, which belongs to the family, Myrtaaceae.

**m) Ambrette:** Ambrette seeds contain oil; it can be obtained by using the expression method. The oil is rich; it is sweet, floral and musky in nature. The oil can be used as an anti-aging agent.

**n) Sandalwood:** It is obtained by the steam distillation process from the hard wood of *Santalum album* belonging to the family, Sundalaceae. In most perfumes, it is used as a fixative agent.

**7.4: Protective Agents:** In the formulation of creams, silicones act as protective agents; a combination of silicones with other barrier agents like petroleum jelly, beeswax, paraffin etc. can produce excellent barrier creams.

**a) Bleaching Agents:** The most commonly used bleaching agents are given below. Mercury Compounds: Mercuric chloride (HgCl<sub>2</sub>), red mercuric oxide (HgO) and ammoniated mercury are examples of mercury compounds that can be used, for their skin bleaching effects. Currently, the use of mercury compounds is prohibited in cosmetics.

**b) Hydroquinones:** They are mostly used as bleaching agents for temporarily lightening skin at a concentration of 1.5%-2%. In the case of 5% concentration, redness and burning may be produced. Reverse action of hydroquinones takes place on exposure to sunlight. If the cosmetics containing hydroquinone are discontinued, then too, a similar effect can be observed.

**c) Catechol and its derivatives:** Catechol exhibits skin lightening effect to an extent. 4- Isopropyl catechol has been found to be among the most potent de-pigmenting agents. They can produce irritation and a sensitization reaction at concentrations of 3% or more.

**d) Ascorbic Acid:** and its derivatives: Ascorbic acid does not seem to be very effective as a de-pigmenting agent, but its use has been found to be safe. It is mostly used in skin bleaching creams, which contain hydroquinone as a stabilizer (antioxidant). Ascorbyl oleate used in skin bleaching cream for bleaching freckles in human skin is used at a concentration of 3% and 5%.

**7.5: Oxidizing Agents:** Hydrogen peroxide has been used as an oxidizing agent in skin bleach creams. Sometimes, zinc peroxide is also used in anhydrous ointments such as bleaching agents, although the properties of zinc peroxide have not been proved.

**7.6: Opaque Covering Agents:** Various cosmetic products which contain white or pale pigments like titanium dioxide, zinc oxide, talc, kaolin, bismuth etc. can provide a temporary but remarkable change in the colour of the skin.

**7.7: Preservatives:** These are the agents who are used to prevent spoilage of cosmetic products. They are products of the oxidation of oils and fats and also the growth of microorganisms. Most cosmetic preparations, especially those containing water are likely to deteriorate if preservatives are not added. Properties of preservatives

□ **An ideal preservative must possess the following attributes;**

1. It should be compatible with the formulation.
2. Soluble to the extent needed to achieve an effective concentration.
3. Stable enough to provide a sustained antimicrobial effect.
4. Colourless and odourless or nearly so.
5. Non-irritant and non-allergic in the concentrations used.

### Examples

Organic acids: Benzoic acid, Formic acid

Alcohols: Ethyl alcohol, Isopropyl alcohol

Aldehydes: Formaldehyde, Cinnamic aldehyde

Phenolics: Cresol, Phenol

Esters: Methyl p-hydroxy benzoate, Ethyl p-hydroxy benzoate

Mercury: Thiomersol, Nitromersol

Surface active agents: Benzalkonium chloride, Cetylpyridinium chloride

Miscellaneous compounds: Ethyl Vanillin and Vanillin

8. Antioxidants:

Natural antioxidants like tocopherols present in fats and oils are destroyed during therefining process. Hence, the addition of antioxidants is essential to avoid the rancidity of fats and oils in cosmetics due to oxidative deterioration.

Some of the common antioxidants used in cosmetic preparation are.

Amines: Purins and lecithin

Phenols: Gallic acid, Methyl gallate

Quinones :Tocopherols, Hydroxychromans

Esters: Di-lauryl thiopropionate

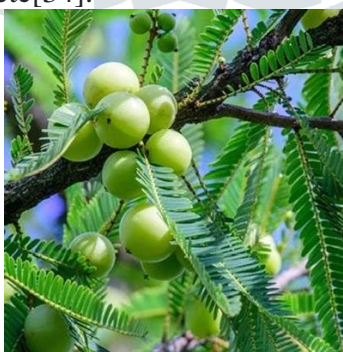
Organic acids: Ascorbic acid

Alcohols: Sorbitol and Mannitol[30].

## **8) Indian Extracts for Herbal Cosmetics:**

Herbs play a significant role, especially in modern times, when the damaging effects of food processing and overmedication have assumed alarming proportions. They are now being increasingly used in cosmetics, foods and teas, as well as alternative medicines. The growing interest in herbs is a part of the movement towards change in life-styles. This movement is based on the belief that the plants have a vast potential for their use as a curative medicine[31].

**8.1:Amla (*Embilica officinalis*):** It grows throughout India. It is the small leafy tree and the name of the fruit is *Embilica officinalis*. This fruit contains high content of vitamin C that is extracted from its seed. It is used for treatment of hair and scalp problems. It grows throughout India and yields an edible fruit. It is used in eye syndromes, hair loss, and children ailments etc[34].



(figure 2: Amla)

**8.2:Brahmi (Bacopa monnieri):** It is used as a face pack to enhance facial complexion, as a hair application to make hair shiny, also removes dandruff and lice in hair.



(figure 3: Brahmi)

**8.3:Shikakai (Acasiacancina):** It is a small shrub like tree. It grows in warm and dry plains in central India. It is effectively used in hair for removing dandruff, lice, oil and dirt.



(figure 4: Shikakai)

**8.4:Neem (Azadirachta indica):** Neem role as, “a wonder drug” and as “Sarva Roga Nivarini- the curer of all ailments” is stressed as far back as 4500 years ago. It is used as immunity booster, blood purifier and used in treatment of skin infections.



(figure 5: Neem)

**8.5:Reetha powder (Soap nut):** It is used in India as a natural hair and body cleanser.



(figure 6: dry reetha)

### **8.6:Tulsi (Ocimum sanctum):**

In India, Tulsi is called as Holy basil and is ubiquitous in Hindu tradition. It is used for treatment of various disorders and also as antivirals.[32]. The botanical name of Tulsi is *Ocimum tenuiflorum*, commonly known as holy basil, tulsi or tulasi, is an aromatic perennial plant in the family Lamiaceae and native to the Indian subcontinent and widespread as a cultivated plant throughout the Southeast Asian tropics. Tulsi has been used for thousands of years as a prime herbs in ayurvedic treatment for its diverse healing properties .it is mentioned by charaka in the charaka samhita , the central teaching of ayurvedic medicine. Tulsi is considered to be an adaptogen, balancing different processes in the body and helpful for adapting to stresses. Marked by its strong aroma and astringent taste it is regarded in ayurveda as kind of "elixir" of life and believed to promote longevity. Tulsi extracts are used in ayurvedic remedies for common cold, headache, stomach, disorder, inflammation, heart disease, various forms of poisoning and malaria. Traditionally, Tulsi is taken in many forms as herbal tea dried powder, fresh leaf or mixed with ghee, essential oil extracted from kapoor. Tulsi is mostly used for medicinal purposes and in herbal cosmetics .widely used in skin preparation for its anti bacterial activity for centuries the dried leaves of Tulsi have been mixed with stored grains to repel insects Recent studies suggest that Tulsi may be a COX-2 inhibitors, like many modern painkiller due to its significance amount of eugenol (1-hydroxy-2-methoxy -4-allyl benzene) . Studies have also shown Tulsi to effective for diabetes by reducing blood glucose levels the same study showed significant reduction in total cholesterol level with Tulsi. Another study showed that Tulsi has beneficial effects on blood glucose level are due to its antioxidant properties. Tulsi also showed some promise for protection from radiation poisoning and cataracts.[35]



(figure 7: Tulsi)

**8.7:Ghritkumar (Aloe vera):** It is used as pain reliever and heals haemorrhoids and also used for sunburn, scratch and also cleansing agent for the skin. It aid to grow new tissue and preventing the skin cancer caused by the sun.



(figure 8: Ghritkumar)

**8.8:Multani mitts (Fullers Earth):** It is Mother Nature's own baby powder. It is useful in removing pimple marks, treating sunburn, unclog pores, to cleanse the skin of flakes and dirt.[32,33].



(figure 9: Multani mitti)

**9) table no. 1):-Composition of herbal facewash**

S. no.	Ingredients	Uses
1.	Neem leaves ( <i>Azadirachta indica</i> )	Antibacterial, anti-fungal, anti-inflammatory, antiseptic, and highly beneficial for oily and acne-prone skin.
2.	Turmeric ( <i>Curcuma longa</i> )	Antibacterial, antifungal and it protects the skin from many skin infections and adds glow to the face
3.	Nutmeg seed ( <i>Myristica fragrance</i> )	Antibacterial, anti-inflammatory, antiseptic, bactericide
4.	Licorice root ( <i>Glycyrrhiza glabra</i> )	Delivers valuable soothing properties to the skin. Highly rejuvenating and nutritive qualities are attributed to it.
5.	Shahi jeera	As perfume
6.	Lemon juice.	To lighten skin and reduce blemish marks on the skin. It is also quite effective for treating acne and pimples. as a natural pH adjuster in cosmetics
7.	Xanthan Gum	A gum produced by the pure culture fermentation of carbohydrate also called Corn Sugar Gum. It is used as a non-toxic thickener and stabilizer.
8.	Orange peel extract	Antioxidant, anti-inflammatory, anti-microbial Orange-peel properties can maintain the natural balance of skin oils and tighten the skin by absorbing excess oils and removing dead skin cells.
9.	Rose water	Used as a solvent; it also has antibacterial and antiseptic properties which eventually cure acne.
10	Walnut	The scrubbing action of walnut granules helps break up the mild oil deposits and clear away dead skin cells and debris[36,37].

**10) (table no. 2):-Composition of herbal cream**

S. no.	Ingredients	Roles
1	Aloe Vera gel	Anti-aging, anti-inflammatory, moisturizer, that reduces acne and pimples.
2	Tulsi	Antibacterial, adds glow to the face
3	Neem	Promote wound healing, and relieves skin dryness, itching, and redness
4	Beeswax	Emulsifying agent, stabilizer, and gives thickness to the cream[37].

## 11) Herbs Used in Cosmetics/Cosmeceuticals

There are numerous herbs available naturally having different uses in cosmetic preparations for skincare, hair care and as antioxidants, fragrant etc. Some of the important examples are as follows:

### 11.1:Skincare

**Coconut oil:** It is produced by crushing copra, the dried kernel, which contains about 60-65% of the oil. *Coconut oil* contains a high amount of glycerides of lower chain fatty acids. *Coconut oil* is derived from the fruit or seed of the coconut palm tree *Cocos nucifera*, family *Arecaceae*. The melting point of coconut oil is 24 to 25°C (75-76°F) and thus can be used easily in liquid or solid forms and is often used in cooking and baking. Coconut oil is excellent as a skin moisturizer and softener[38].



(figure 10: Dry Coconut)

**Jojoba oil:** It is a mixture of long chain, linear liquid wax esters extracted from the seeds of the desert shrub *simmondsia chinensis*, family *simmondsiaceae*. Jojoba oil is easily refined to remove any odor, color it is oxidatively stable, and is often used in cosmetics as a moisturizer and as a carrier oil for exotic fragrances. Human sebum and jojoba oil are virtually identical. Sebum protects and moisturizes the skin and hair but is stripped away by chemicals, pollutants, sun and the aging process, resulting in dry skin and hair. Jojoba oil replenishes what skin and hair lose and restores them to their natural pH balance[39].



(figure 11: Jojoba seed)

**Olive oil:** This oil is a fixed oil extracted from the fruits of *olea europaea*, family *oleaceae*. The major constituents are triolein, tripalmitin, trilinolein, tristearate, monosterate, triarachidin, squalene,  $\beta$ -sitosterol and tocopherol. It is used as skin and hair conditioner in cosmetics like lotions, shampoos etc. It is a potent fatty acid penetration enhancer[39].



(figure 12: Olive Seed)

## 11.2:Antiaging

**Rhodiola rosea-Rhodiola rosea:** It is commonly known as golden root, roseroot, Aaron's rod, arctic root, king's crown, *lignum rhodium*, orpin rose. It is a plant in the Crassulaceae family that habitats in cold regions of the world. It grows mainly in dry sandy ground at high altitudes in the arctic areas of Europe and Asia, Traditional folk medicine used *R. rosea* to increase physical endurance, work productivity, longevity, resistance to high altitude sickness, and to treat fatigue, depression, anemia, impotence, gastrointestinal ailments, infections, and nervous system disorders *R. rosea* is rich in phenolic compounds, known to have strong antioxidant properties[40,41].



(figure 13: Rhodiola rosea)

**Sunflower Oil:** It is the non-volatile oil extracted from sunflower seeds obtained from *Helianthus annuus*, family Asteraceae. Sunflower oil contains lecithin, tocopherols, carotenoids and waxes. It has smoothing properties and is considered noncomedogenic[38]. It is the non-volatile oil extracted from sunflower seeds obtained from *Helianthus annuus*, family Asteraceae. Sunflower oil contains lecithin, tocopherols, carotenoids and waxes. It has smoothing properties and is considered noncomedogenic. A simple yet cost-effective oil, well tried and tested for generations in a wide variety of emulsions formulated for face and body Products.[45].





(figure 14: Sunflower)

**Ginkgo:** It comes from the ginkgo tree, *Ginkgo biloba* belongs to family Ginkgoaceae. It is best known, as a circulatory tonic, in particular for strengthening the tiny little capillaries to all the organs, but especially to the brain. The capillaries become more flexible and as a result more oxygen is delivered to the brain and eyes (to protect against degenerative eye diseases like macular degeneration), as important as we age [38].

In China and Japan, the leaves and nuts of the *Ginkgo biloba* (*G. biloba*) tree have been used for thousands of years to treat various medical conditions, including poor blood circulation; hypertension; poor memory, and depression, particularly among the elderly; male impotence. In addition, it is gaining a similar reputation as an antioxidant and anti-inflammatory agent [45]. The *G. biloba* extract EGb 761, prepared from the tree's leaves, is a natural mixture containing flavone glycosides (33%), mostly quercetin and kaempferol derivatives, and terpenes (6%), which has exhibited the capacity to isolated from the leaves of *Lawsonia inermis* has shown significant antifungal antibiotic effect [42].



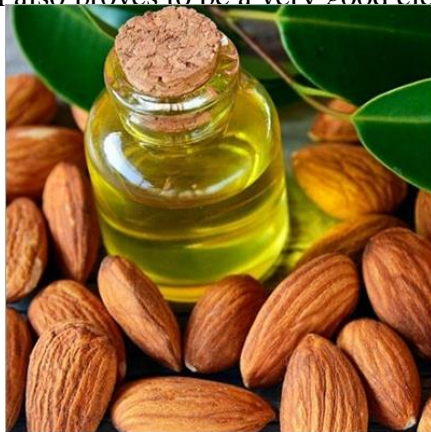
(figure 15: Ginkgo)

**Henna:** Henna comes from the plant *Lawsonia inermis* family Lythraceae, which contain a dye molecule called lawsone, which when processed produces Henna powder. Besides lawsone other constituents present are gallic acid, glucose, mannitol, fats, resin (2%), mucilage and traces of an alkaloid. Leaves yield hennatannic acid and an olive oil green resin, soluble in ether and alcohol [43]. Lawsone edible fruit. It is highly praised both for its high Vitamin C content and for the precious oil, which is extracted from its seeds and pulp and used as a treatment for hair and scalp problems. It is used in eye syndromes, hair loss, and children ailments etc [44].



(figure 16: Henna Leaf)

**Almond Oil:** The almond oil is obtained from *Prunus dulcis*. It proves to be very nourishing, and softens and strengthens the hair. The almond oil also proves to be a very good cleansing agent.



(figure 17: Almond)

**Arachis Oil:** This is also a fixed oil obtained from the seeds of the *Arachis hypogea* belonging to the family Leguminosae. The oil is pale yellow in colour, with a faint nutty odour. It is used in the preparation of hair oils and „Brilliantines“.

**Castor Oil:** This oil is obtained from the seeds of *Ricinus communis* belonging to the family, Euphorbiaceae. It is used as an emollient, in the preparation of lipstick, hair oils, creams and lotions.



(figure 18: Castor)

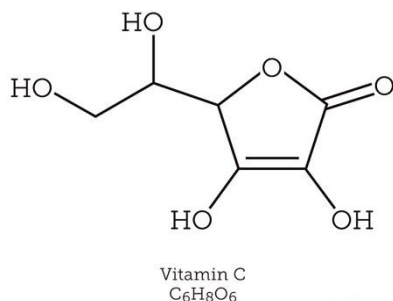
**Eucalyptus Oil:** Eucalyptus oil is the generic name for distilled oil from the leaf of *Eucalyptus*, a genus of the Plant family Myrtaceae. Eucalyptus oil can help to get rid of dandruff, which in turn can help to promote healthy growth of hair.

**Rose Oil:** The well-known essential oil is probably rose oil, produced from the petals of *Rosa damascena* and *Rosa centifolia*, family Rosaceae. Steam-distilled rose oil is known as "rose otto" while the solvent extracted product is known as "rose absolute". It is used more commonly in perfumery. The key flavour compounds that contribute to the distinctive scent of rose oil are beta-damascenone, beta-damascone, beta-ionone, and oxide.

**Citronella Oil:** It is one of the essential oils obtained from the leaves and stems of different species of *Cymbopogon* family *Cardiophyllaceae*. The crisp, rich citrus or lemon like aroma of this oil drives away body odour and is used deodorants and body sprays, although in very small quantities, since in heavy doses it may give skin irritations. It can also be mixed with the bathing water to have a refreshing, body odour ending bath.

**11.3:Antioxidants:** Antioxidants either synthetic or natural can be effective in preventing free radical formation by scavenging them or promoting their decomposition and suppressing such disorders. Currently, there is a growing interest toward natural antioxidants of herbal resources[46,45].

**Vitamin C:** Vitamin C is necessary for the hydroxylation of proline, procollagen, and lysine. Vitamin C improves the changes caused by photo damage. Vitamin C has been used effectively to stimulate collagen repair, thus removing some of the effects of photo-aging on skin. Vitamin E: (Alpha-tocopherol) is the major lipophilic antioxidant in plasma membranes and tissues. The term Vitamin E collectively refers to 30 naturally occurring molecules (4 tocopherols and 4 tocotrienols), all of which exhibit Vitamin E activity. Its major role is generally considered to be the arrest of chain propagation and lipid peroxidation by scavenging lipid peroxy radicals, hence protecting the cell membrane from destruction[47].



(figure 19: Vitamin C structure)

**Tamarind:** Tamarind or *Tamarindus indica* L. of the Fabaceae, subfamily Caesalpinioideae consists of amino acids, fatty acids and minerals of tamarind plant parts. The most distinguished characteristic of tamarind is its sweet acidic taste due to tartaric acid. Besides being a rich source of sugars, tamarind fruit is also an excellent source of Vitamin B and contain minerals, exhibit high antioxidant capacity that appear to be associated with a high phenolic content, and thus can be an important food source[48,49].



(figure 20: Tamarind)

**Vitamin E:** Sources of vitamin E is both plants and animals. It has free radical scavenging activity. It is mainly present in almonds, nuts, whole cereal grains, vegetable oils etc. The major lipophilic anti-oxidant in plasma membrane and tissues is  $\alpha$ -tocopherol. The 30 naturally occurring molecules (4 tocopherols and 4 tocotrienols) all of which exhibit vitamin E activity.[51].



(figure 21: Vitamin E)

**Hibiscus:** A red tone made by removing Hibiscus sabdariffa from the Malvaceae family. Hibiscus is plentiful in calcium, phosphorus, iron, and Vitamin B1, all of which help to advance more grounded hair development and forestall untimely greying colour acquired from the concentrate of Hibiscus sabdariffa family Malvaceae. Hibiscus comprises of calcium, phosphorus, iron Vitamin B1 used to invigorate thicker hair development and forestall untimely turning grey of hair [50].



(figure 22: Hibiscus)

## 12) CONCLUSION

Herbal cosmetics are prepared using herbal ingredients to treat different ailments and to promote healthy life and for beautifying the skin without damaging the skin functions and structure. There are numerous herbs available naturally having different uses in cosmetic preparations for skincare. The current review highlights the importance of herbal cosmetics, the herbs used in them and their advantages over the synthetic counterparts. Herbal cosmetics usage for skin has been increased in personal care system and more demand for natural cosmetics. Based on the review here we concluded that herbal cosmetics are very safe and does not produce any toxic and adverse reactions compare to marketed cosmetics products. We suggest that, we use herbal cosmetics in future, we will avoid skin problems. Herbal cosmetics are prepared, using permissible cosmetic ingredients to form the base in which one or more herbal ingredients are used to treat different skin ailments and for the beautification. The chemical formulation of all these cosmetic products includes addition of various natural additives like waxes, oils natural color, natural fragrances and parts of plants like leaves, etc. The Cosmeceuticals are agents that lie somewhere between pure cosmetics (lipstick and rouge) and pure drug (antibiotics, corticosteroids) methods. The cosmetic products are the best option to reduce skin problems such as hyper pigmentation, skin wrinkling, skin aging and rough skin texture etc. The demand of herbal cosmetic is rapidly expanding. The advantages of herbal cosmetics are lower cost, side effects free, environmental friendly, safe to use etc. Also has a great future ahead as compared to the synthetic cosmetics. Proper regulation of these herbs and standardization will lead to tremendous and significant growth in herbal cosmetics field.

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