



# A Comprehensive Review on Medicinal Plants Used in Skin Therapy

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**Abstract:** Human being is very much conscious and caring about their beauty and maintains their skin condition from daily hazardless. From ancient time herbal therapy is one of the ways to care the skin condition and largely used in Ayurveda, Unani and Siddha medicine. Mother nature has given number of medicinal plant having different ingredients to cure and protect skin condition. Cosmetics used for skin therapy mainly for smoothing, cooling, cleaning, moistening, toning, nurturing, anti aging purpose. Herbal cosmetics itself suggests these are free from harmful synthetic materials and improve the skin condition comparatively lesser side effect such as itching, burning or irritation the skin with synthetic cosmetics. The current review discuss on advantages of medicinal plants extract which is used as an active ingredients for preparing herbal cosmetics to maintain skin types and conditions.

**Keywords:** Herbal cosmetics, Skin therapy, Ayurveda, Unani, Siddha, Itching, Anti-aging, Formulations.

## I. INTRODUCTION

Now a day to improve the health and beauty through the skin texture, cosmetics prepared from medicinal plants having high demands due to its mild action and non-toxic in nature. These medicinal plants are the rich sources of different chemical phytoconstituents like alkaloids, glycosides, tannins, essential oils like volatile and fixed oils, flavonoids, terpenoids, resins, proteins etc to improve different skin problems [1-4]. Those constituents can be derived from the extraction of leaves, root, seed, bark, fruit, flower, stem, full herb of medicinal plants either in fresh part or dried part based on the plant. Many formulations like herbal shampoo, moisturizer, soap, ointment, lotion, mixture, tincture, solution, emulsion, suspension, cream, etc. Sometimes skin are very dried especially at winter. At that time the dried skin can be moisturized by using the formulations like moisturizer. During summer session, skin requires to protect from harmful UV rays and sunlight. So in that time sunscreen lotions are required. Sometimes skin are so much dirty in nature. So at that time soap, face wash are required to cleaning the skin from harmful microbes and dust to protein the skin from toxicity [5-10].

## II. SKIN THERAPY

Skin is vital part for a healthy person. At every ages, skin care treatment is necessary for maintaining the looks and perfectness of the skin. Different kinds of skin problems are faced by humans. To overcome the problems some of the formulations contains natural herbs are used in now a days. Normal skin is healthy and perfect skin that contains no pores and soft clear smooth shape, surface cum texture. Dirty skin is unclear with full of dust and microbes. These types of skin must require using of proper facewash or soap containing herbal

constituents obtained from medicinal plants like neem, aloe, etc. Oily skin is one of the vital problems in summer. This type of skin is very shiny. The skin contains too much sebum & porous particles with full of pimples and acne. Sebum is oily material. For the presence of sebum, the skin is so much oily. Rose water is recommended for this type of skin. Another one problem is dry skin. Dry skin is basically happened due to lack amount of sebum. The skin is very itchy and dehydrated types in nature. Sometimes in those dry skin problems, the skin is ruptured. This problem is generally raised in winter. A different type of herbal moisturizer of aloe is generally used to overcome the problems. Combination skin is another one skin issues in that field. Some parts of skins are dry and some parts are oily in nature. The oily part is basically present in nose, forehead and chin in face. The dry parts are basically present in jaws, cheeks, hair follicles, etc. Aloe contains facewash or lotion is required to overcome those problems. Withered skin is very common problems to old persons as well as the problem can also be seen in young adults. The skin is full composed of wrinkles. The skin is very rough and tough in texture. Carrot juice mixture with honey is required to solve the problems. Sometimes acne is one of the biggest problems. Basically it can be shown on skull skin as well as facial parts. Skin acne is composed of full of red sores and pimples. Aloe and sandal wood contains formulations are required to minimize the acne. Chapped Skin is another one hazards in skin problems. This skin is very rough and sometimes the skin is ruptured or cracked. This type of incident are generally occurred the lower portion of leg feet. Olive oil, coconut oil or mustard oil containing formulation is generally recommended to resolve the issue. Sometimes the skin is very sensitive. Sensitive skin is very prone to cold and heat. This problem is very common to all aged people. The skin is very allergic and for those cases the skin gets so much itchy in nature. The skin is easily dried & absorbs harmful UV rays and ultimately the skin is not getting protected [11-12]. Sandalwood contains formulations are required to treat this skin problem. Sallow skin is one of the biggest problems now a day. In these problems, the skin is decolorized basically. The skin is basically receiving yellowish or brownish in color. The skin loses its natural pigments. Generally vitamin B is used to overcome the problems [4,5,13].

### III. FORMULATIONS

Different types of herbal formulations are available now a day [4,5,14-16].

- i) Sunscreen:** These formulations are basically used to protect sunlight and harmful UV rays. Aloe contains sunscreen lotion is applied on the skin to protect the skin.
- ii) Face wash:** These are used to clean the face from dust. Aloe contains facewash is applied on the skin.
- iii) Soap:** These are used to clean the skin from the dust. Neem contains soap is given on the skin.
- iv) Shampoo:** These are used to rinse the hair and clear the skull skin. Aloe contains shampoo is applied on the skull to clear it from the dust.
- v) Lotion:** These are used to moisturize the skin and protect the skin from germs. Aloe contains lotion is applied and given on the skin. It can be used as antiseptics.
- vi) Nourisher:** These agents are used to provide the nourishment of the skin. Honey is applied to nourish the skin.
- vii) Powder:** These are used to maintain smoothness of the skin. It is also used for drying of the oily skin in summer session. Calendula contains powder can be used for this purposes.
- viii) Emollient:** This type of formulation is used to maintain development, softness, soothing and nourishment of the skin. Aloe is used for this issue.
- ix) Moisturizer:** These are used for moisturizing the dry skin especially in winter. Aloe is also used as moisturizing agent.
- x) Cream:** Creams are used to prevent infection, smoothness cum softness, nurturing and moisturizing the skin. Aloe, turmeric extraction can be used in cream type of formulation.
- xi) Gel:** These are used for shining and smoothness of the skin. It is also used to prevent the infections. Aloe is basically used in that formulation.
- xii) Oil:** Oil is used to prevent the infections caused by microbes and maintain the smooth texture of the skin. Tulsi and neem are used on of the plant ingredient in this formulation.
- xiii) Juice:** These agents help to promote and develop the skin cell. It also helps to maintain brightness skin. Carrot, Beetroot, aloe, etc are used for this type of formulation.

#### IV. MEDICINAL PLANTS USED IN SKIN TREATMENT

**1) Aloe vera:** It is very important plant used in various skin care treatment. It is also known as ghrīt kumārī in hindi language. The family of the plant belongs to Liliaceae. The kingdom is plantae. The scientific name is *Aloe barbadensis*. It is basically grown in tropical part of world like Africa, Europe, india with full of bright sunshine days. The name of genus is aloe. The leaves are used for aloe plant. The extraction of aloe leaves is done. This extraction contains aloe-emodin, aloin,  $\beta$ -barbaloin, rhein, aloesin, aloe amodine, choline salicylate, resins, isobarbaloin, chrysophanic acid, chrysamminic acid, gaanthracene, mono and polysaccharides, Amino acids, inorganic ingredients, minerals, etc. Aloe is used in different formulations like shampoo, face wash, emollient, lotion, gel, moisturizer, etc [17]. It is basically used for the treatment of softening, moisturizing, nurturing the skin. It is also used as emollient. It is used to eliminate the acne or pimples from the skin. It also helps to prevent the skin from the sunlight and harmful UV rays. For those cases it is used in sunscreen lotions. It is also used as bactericide due to the presence of aloe-amodine. It is also used to prevent itching and inflammation [4,5,18].



Figure 1: Aloe vera

**2) Tulsi:** It is another one very common plant used in skin treatment. The common name is holy basil or sacred basil. The scientific name of the plant is *Ocimum sanctum*. The name of family is Lamiaceae. Whole herb (including fresh and dried leaves) is useful part of the plant. It is cultivated in India, Bangladesh, Philippines and semi urban areas etc. The genus and kingdom are Ocimum and Plantae respectively. Tulsi contains volatile oil, eugenol, methyl eugenol, carvacrol, cineole, linalool, caryophylline, vitamin C, tartaric acid, saponins, glycosides, alkaloids, fixed oil, mucilage, fatty acid, maleic acid, citric acid, terpenes, carotene, zinc, calcium, iron, etc [19]. Tulsi is available in oil formulation. It is used as an anti bacterial, insecticidal and anti inflammatory for the treatment of skin. It is one of the good sources of antioxidant [4,5,20].



Figure 2: Tulsi

**3) Turmeric:** It is known as haldi, Indian saffron, haridra in region and very common in household. It is used as spice. It is grown in India, Sri lanka, Indonesia, Peru, Jamaica and South East Asia. The rhizomes of the plant are basically used. The plant part is yellowish brown in color, bitter in taste and characteristic in odor. The scientific name is *Curcuma longa*. The family and genus name are Zingiberaceae and kingdom respectively. The used parts contain  $\alpha$ -curcumene,  $\beta$ -curcumene, DL r termerone zingiberene, Bis demethoxy curcumin, camphor, camphene, demethoxy curcumin,  $\beta$ -pinene,  $\alpha$ -phellandrene, etc [21]. The plant parts are used as antiseptics, antimicrobials, anti-inflammatory and strong antioxidant [4,5,22].



Figure 3: Turmeric

**4) Neem:** Neem is very important in the world of medicinal plants. It is having the scientific name of *Azadirachta indica*. The common name is margosa. The family is Meliaceae. The plant is grown in India, Sri lanka, Thailand, Mauritius, Africa, Bangladesh, Malaysia, etc. The full aerial parts including leaves are used for the preparations of formulations like oil, soaps, shampoo, face wash, gel, etc. Neem contains nimbin, nimbinin, nimbidin, azadirachtin, meliantriol, salanin, margolone, myricitin, quercetin, nimaton,  $\beta$ -sitosterol, margolonone, nimboesterol, kaempferol, nimbolide, azadiradione, etc [23]. Neem is having antimicrobials and insecticidal properties. Neem is used as antimicrobials to protect the skin from microbes [4,5,24].



Figure 4: Neem

**5) Sandal wood:** This is very common plant seen in India and south east Asia. The main part used in the skin therapy is wood. The extraction is given after performing the distillation of wood obtained from the plant. The scientific name is *Santalum album*. The family is Santalaceae. The plant extraction contains santene, santalol, santenone, santalone, santalene, teresantol, etc. It is used as antiseptics [4,5,25].



Figure 5: Sandal wood

**6) Liquorice:** The root and stolon are basically used for the plant. The common name is yasti nad mulethi. The scientific name is *Glycyrrhiza glabra*. The family and genus is Leguminosae & Glycyrrhiza respectively. It is found in India, China, Japan, and Europe. The main chemical constituents are glycyrrhithic acid, glycyrrhizin, glucuronic acid, liquiritoside, Isoliquiritin, liquiritin, isoliquiritoside, starch, glucose, mannitol, resin, volatile oil, etc [26]. It is available in gel, powder and oil formulation [27]. It is having anti-inflammation and antioxidant property. It also reduces pigmentation or spot cum marks on skin [4,5,28].



Figure 6: Liquorice

**7) Lemon:** It is very common and found in India, California, Jamaica, Florida, Italy and Australia. The fruit part is used. The scientific name is *Citrus limonis*. The family is Rutaceae. The fruit contains vitamin C, hesperidin, pectin, calcium oxalate, limonene, citral, geranyl acetate, terpineol, citronellal, nerol, geraniol, etc. It is used as a strong & powerful antioxidant [4,5,29].



Figure 7: Lemon

**8) Amla:** It is commonly known as Indian goose berry and amlaki. It is cultivated in India, Myanmar, Sri Lanka. The fresh fruit part is used. The scientific name is *Emblica officinalis*. The family of the plant is Euphorbiaceae. The fruits are green in fresh condition and light yellow cum brick red in mature condition. It is odorless and sour in taste. It contains vitamin C, phyllembilin, tannin, pectin, phosphorous, iron, calcium, etc [30]. It is having as strong antioxidant property due to the presence of vitamin c or ascorbic acid. It is also used as skin nourisher [4,5,31].



Figure 8: Amla

**9) Cucumber:** It is seen in India, Bangladesh, Japan, etc. The fruit part is used. The scientific name is *Cucumis sativam*. The family is Cucurbitaceae. It contains linoleic acid, palmitic acid, oleic acid, stearic acid, vitamin C, vitamin K, vitamin B6, vitamin A, magnesium, potassium, copper, manganese, etc. It removes dark circles, skin tanning, patches, wrinkles on the skin. It is also used as anti-aging purposes [4,5,32].



Figure 9: Cucumber

**10) Papaya:** It is found in India, Bangladesh, etc. It is very common tree. The fruit part is used. The scientific name is *Carica papaya*. The family name is Salicaceae. It includes vitamin A, vitamin C, vitamin B, carbohydrates, alkaloids, proteins, proteolytic enzyme, etc [33]. It clears dark spots from the skin. It is used as anti-aging material as because it maintains the development of skin cell [4,5,34].



Figure 10: Papaya

**11) Calendula:** It is very common plant in India. It is cultivated in south east-west Asia and Europe. The synonym of this plant is marigold. The scientific name is *Calendula officinalis* [35]. The family name is Asteraceae. The genus is *Calendula*. Different parts of plants like flowers and leaves are used. It contains various chemical ingredients like flavonoids, sterols, saponins, lipids, carotenoids, phenolic acids, terpenoids, coumarines, volatile oil, amino acids, quinines, etc [36]. It has various uses in skin treatment. It has wound healing properties so it can be used for different types of wounds treatment on the skin. It relives itching of the skin [37]. It is used as anti-inflammatory agent. It reduces inflammation caused by skin acne, pimples or any other skin diseases. It is also used as an antioxidant. It removes wrinkles cum tanning from the skin. So it can be also used as anti-wrinkles or anti-aging agent [38]. It is available in oil and moisturizer formulation to protect the skin from sunlight and harmful UV rays [4,5,39].



Figure 11: Calendula

**12) Chamomile:** It is one of the important medicinal plants in world. The scientific name is *Matricaria chamomilla*. The family name is Asteraceae or Compositae. The kingdom is plantae. The dried flowers are used. It is grown and cultivated with fully or partly sunshine days in India, Germany, Hungary, etc. It is having various chemical compositions like sesquiterpenes, ployacetylenes, coumarines, flavonoids (apigenin, quercetin, luteolin, etc.), bisabolol, farnesene, nobilin, 3-epinobilin, chamuzelene, etc [40]. It clear wrinkles from the skin. It can be used as anti-aging agent. It prevents acne from the skin. It is also used for the treatment of skin eczema. It is also applied for the treatment of wounds on the skin as because it has wound healing properties. It is available in cream type of formulation [4,5,41].



Figure 12: Chamomile

**13) Coffee:** It is very common in whole world. It is extracted from dried ripe seeds of *Coffea arabica*. The family is Rubiaceae. The genus is *Coffea*. It is mostly grown in India, Brazil, Indonesia, Colombia, Vietnam, and Ethiopia. It contains different types of active chemical compositions like caffeine, fixed oils, gum, tannin, caffetannic acid, carbohydrates, aromatic oils, sugars and proteins mainly [42]. It is used for the treatment of skin acne problems. It reduces wrinkles on the skin. It can be also used as anti-aging or anti-wrinkle agent. It brightens the skin color. It regulates the production of collagen in the skin. It is having a property of very good blood circulation in the skin [4,5,43].



Figure 13: Coffee

**14) Carrot:** Carrot is very important plant in India. It is basically used as salad cum food. It is having rich sources of vitamin A. The root is used as skin care treatment. The color is purple yellow, orange yellow, purple red, purple orange and purple orange red. The scientific name is *Daucus carota*. The genus is *Daucus*. The kingdom is Plantae. It is mainly cultivated in Asia and Europe, The family is Apiaceae [44]. It contains vitamin

A, carotenoids,  $\beta$ -carotene, limonene, camphene, caryophyllene,  $\alpha$ -terpinene,  $\gamma$ -carotene,  $\alpha$ -carotene, myrcene, thiamin, niacin, terpinolene, riboflavin, vitamin C, folic acid, p-cymene, heptenol, falacarinol,  $\gamma$ -terpinene,  $\beta$ -bisabolene,  $\beta$ -pinene, dedocenal, sugars, lycopene, lutein, isocoumarin, mainly. It is showing antioxidant activities [45]. It protects sunlight and harmful UV rays from the skin. It also maintains skin hydration. It is available in juice formulation prepared by extraction of carrot roots [4,5,46].



Figure 14: Carrot

**15) Beetroot:** Beetroot is very commonly used as salad contents in the food. The roots are basically used. The scientific name is *Beta vulgaris*. The kingdom is Plantae. The family name is Amaranthaceae [47]. The subfamily is Betoideae. The genus is Beta. Beetroot is generally grown in cool weather. It is cultivated mostly in India, south east Asia, Europe. The root color is pink or bright red. Beetroot is available in juice formulation. The juice is extracted from the beetroot. It contains  $\beta$ -cyanins,  $\beta$ -xanthins, saponins, flavonoids, polyphenols, betalains, anthocyanins, vitamin C, vitamin B9, carotenoids, minerals mainly [48]. It is showing antimicrobial, anti-inflammatory and antioxidant activities [49]. It reduces skin tanning, drying, wrinkles, patches, spots, acne on the skin. It hydrates skin. It develops and promotes skin cell. It can be also used as anti-wrinkle or anti-aging agent [4,5,50].



Figure 15: Beetroot

## V. CONCLUSION

Medicinal plants are very useful for treating many skin related problems in worldwide. India is fully composed of medicinal plants cultivation and collection with the help of nice weather. The solution is possible for dry skin, sensitive skin, skin acne, pimples, oily skin, sallow skin, chapped skin, withered skin, tanned skin, wrinkles problems with the treatment of different kinds of herbal containing drugs. The products are having fewer side effects cum no toxicity in comparison to synthesized products. Some medicinal plants improve blood purification process. The extraction of various parts of medicinal plants are used as anti-inflammatory, antioxidant, anti-aging, anti-wrinkles, moisturizing, nurturing, antiseptic, hydrating and cleaning agents.

Conflict of interest: Nil

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