



REVIEW ARTICLE

Ethnomedicinal Plants in Dermatological Uses- A Review

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Abstract

Ayurveda is one of the oldest and most natural medicinal systems in India. It refers to the old system of traditional medicine that is still practiced in India and several other countries in South Asia. It is based on a holistic therapy approach that aims to cure human disorders by restoring balance to the many aspects of human existence, including the body, mind, intellect, and spirit. It is based on the three Tridosha of Vata (Motion), Pitta (Conversion), and Kapha (Fusion). Dominance of Pitta doshas causes an imbalance in the body, resulting in skin ailments. Our concern for various skin problems has become a linchpin in this era. Environmental causes such as pollution, UV rays, exposure to various chemical, insecticides and fertilizers are manifested in different skin conditions such as acne, black spots, wrinkles, dull skin, sunburn, and so on. Many other biotic factors, such as fungi and bacteria, can cause harm. Cosmetics may include various hazardous chemicals in a hidden way and they are also, unregulated and cheap, and hence frequently utilized. Chemicals applied to the skin in different cream formulations, are very dangerous because they can penetrate directly into the circulation via the skin barrier; Formaldehyde, Phthalates, Fragrances, Parabens, Oxybenzone, PEG Compounds, Mineral Oil, Triclosan and many more harmful and carcinogenic compounds may be found in cosmetics that people use on a daily basis. Many of these chemicals build up in tissue, amplifying their effects. Ayurvedic medicinal plants have been the most fruitful source of medication research leads, with over a hundred novel compounds now in clinical trials. Herbal have the potential for pigmentation suppression, antioxidant capacity and antibacterial activity, which is why they are commonly used in skin care products. Medicinal plants occur naturally and are relatively safe, environmentally friendly, and readily available. Traditionally, a variety of plants have been used to treat different diseases and it is necessary to promote them in order to preserve human lives.

Keywords: Natural products; Skin care; Ayurveda; Medicinal herbs

Introduction

In the shloka “Samadosha-samaagnischa samadhatu mala kriyaaha Prasannaat maindriyamanaha swasthaitiabhidheeyate” from the SushrutaSamhita, the term “health” is defined in terms of ayurveda.

This indicates that one is in perfect health when all three doshas, all body tissues and components, and all excretory processes are in perfect order, together with a happy mind, senses, and soul. Any one of the doshas might become dominant, which leads to imbalance and many illnesses. Numerous internal and external influences that manifest as a change in one's constitution away from the balanced condition upset this equilibrium. In our era, our worry for numerous skin issues has taken on crucial importance. Numerous skin conditions are also influenced by tridosha imbalance and environmental factors including pollution and Exposure to ultraviolet. (Weiss *et al.* 2000). The human body's largest and most diversified organ is the skin. The body's outermost layer, the skin, serves as the first line of protection. Skin has a multi-layered structure that is made up of many distinct components that make up numerous different layers, including the epidermis, dermis, and hyper dermis. As a result of chemical and physical interactions within these components, skin carries out a wide range of activities. Skin acts as a shield to the external world as its primary purpose. Due to its flexibility and resilience, it

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shields the body from impact and friction injuries. (Igarashi *et al.* 2007).

Skin that is healthy, and beautiful has a significant impact on a person's sense of wellbeing and self-perception. A diverse variety of skin issues, such as blisters, hair loss, aging, rashes, and even life-threatening malignancies, are caused by imbalances in substances that disturb the delicate equilibrium among skin cells. Numerous pathogenic factors contribute to the myriad of disorders that damage skin. Although chemical skin care and cosmetics have long-term harmful effects, people are resorting to them since skin issues are becoming more common and they want quick solutions. Unknown dangerous substances might be included in cosmetics. Human health may be negatively impacted by toxins. Nature gives not just food, shelter, and fodder, but also a huge array of cures for all human ailments. The development of chemical and phytochemical analyses has led to an increase in the use of herbal medicine to treat human illnesses. Compared to synthetic medications, herbal ones are more affordable, have less side effects strengthen the immune system, are simpler to get, are more cost-effective, etc. Herbal cosmetics and drugs composed of herbal extracts are used to treat skin issues.

There are various type of Skin Diseases (Figure 1)

Viral Diseases-Chicken pox, Shingles, Rubella, Cold sores, Herpes, Molluscum contagiosum.

Fungal skin diseases - Tinea Versicolor, Onychomycosis, Cutaneous candidiasis, Athlete's foot, Jock Itch, and Ring worm

Bacterial skin diseases - Cellulitis, Erysipelas, Carbuncles, Folliculitis, Furuncles, and Impetigo.

Deficiency related diseases - Skin dryness, Skin Rashes, Eczema, Skin Ulcers, Psoriasis, Scally Dermatitis

UV- Radiant skin diseases – Sun burn, Age spots, Skin cancer, Skin allergies, Melasma, Polymorphous Light Eruption.

Genodermatoses skin diseases - Albinism, Mal de Maleda, Lamellar Ichthyosis, Keratosis^[12]

Acne vulgaris - triggered by *Propionibacterium*, occurs in adolescence due to dehydroepiandrosterone

Melasma - skin disorder, dark patches, female hormonal (estrogen and progesterone) imbalances

Hyperpigmentation - skin darkening/patches, Due to visible and UV light.

Eczema (atopic dermatitis) - is caused by a combination of immune system activation, genetics, environmental triggers and stress.

Cosmetics in Market

In Charak- Samhita, numerous herbs like Nagkeshara (*Mesua ferrea* Linn.), Padmaka (*Prunus serotina* Ehrh.), Yashtimadhu (*Glycyrrhiza glabra* Linn.), Manjistha (*Rubia cordifolia* Linn.), etc. were described for glowing the complexion and for



Figure 1: Skin diseases

other skin disorders. Kushthagna Mahakashaya denotes the compound formulation containing Khadira (*Acacia catechu* Willd.), Abhaya (*Terminalia chebula* Retz.), Amalaki (*Phyllanthus niruri* Hook.f.), Haridra (*Curcuma longa* Linn.), Bhallataka (*Semecarpus anacardium* Linn. f.), Saptaparna (*Alstonia scholaris* R. Br.), Aragvadhya (*Centella asiatica* (Linn.) Urban), Karavira (*Nerium indicum* Mill.), Vidanga (*Embelia ribes* Burm.f.) and Jati (*Glycyrrhiza glabra*) used as effective curative for skin disorders (Krishnamurthy 2001) (Table 1).

Herbal extracts are primarily added to the cosmetic preparations due to several associated properties such as antioxidant properties. These antioxidant botanicals are generally classified into three categories depending upon the nature of their constituents as carotenoids, flavonoids and polyphenols. The carotenoids are structurally related to vitamin A and constitute various retinols like retinoic acid. Flavonoids, in addition to the antioxidant action, impart the UV protection and metal chelating properties. The polyphenolics is a large class and contains various molecules like rosmarinic acid (rosemary), hypericin and oleuropein (Glaser 2004 and Draelos 2003). Apart from these, the herbal extracts have also been used for the topical anti-inflammatory properties. These agents block the inflammatory changes that result during the cutaneous ageing and thus may be helpful in reversing the signs of ageing. Various whitening products with Licorice root extract, many sunscreens with curcumin and sandal extract. Purifying face washes boasting of Neema and Tulsi extracts. Arbutin (*Arctostaphylos* sp) and Glycyrrhizin (*Glycyrrhiza glabra*) has melanin inhibiting property. Squalene (*Bucida spinosa*) as emollient in various creams, Pycnogenol (*Malus sylvestris*) as antioxidants and reduces skin discolourations. Tea tree oil (*Melaleuca alternifolia*) in various shampoos, creams, facewash and massage oil used as antibacterial and anti-dandruff agent. Some herbs like chamomile inhibit the release of histamine and has anti-inflammatory properties;

Table 1: Pharmacological evidences

<i>Plant</i>	<i>Family</i>	<i>Part used</i>	<i>Method of preparation</i>	<i>Administration modes</i>	<i>Action against</i>	<i>References</i>
<i>Acalypha indica</i> L.	Euphorbiaceae	Leaves	Paste	Topical	Eczema, Burning Area, Ringworm.	Tripathi and Srivastava (2010)
<i>Allium cepa</i> L.	Amaryllidaceae	Bulb	Cooking Oil	Topical ears drop	Ear Infection and Eczema	Balamurugan <i>et al.</i> (2019)
<i>Aloe vera</i> (L.) Burm.f.	Asphodelaceae	Leaves	Juice	Topical	Allergic Dermatitis	Ernst (2000)
<i>Amaranthus spinosus</i> L.	Amaranthaceae	Whole Plant	Juice	Topical	Skin Allergy	Policepetal and Manikrao (2013)
<i>Azadirachta indica</i> A. Juss.	Meliaceae	Whole part	Paste	Topical	Scabies, chronic ulcer	Bedi and Shenefelt (2002)
<i>Curcuma longa</i> L.	Zingiberaceae	Rhizome	Extraction	Oral	Hyperpigmentation, Psoriasis, Skin Wrinkles	Biswas <i>et al.</i> (2016)
<i>Eclipta prostrata</i> (L.) L.	Asteraceae	Whole plant	Decoction	Oral	Hepatitis (Infective), Herpes	Bhandary and Chandrashekar (2011)
<i>Euphorbia hirta</i> L.	Euphorbiaceae	Whole plant	Paste	Topical	Cuts	Kumar <i>et al.</i> (2012)
<i>Jasminum grandiflorum</i> L.	Oleaceae	Leaves	Paste	Topical	Eczema, Boils	Bhat <i>et al.</i> (2014)
<i>Plumbago zeylanica</i> L.	Plumbaginaceae	Root, bark	Paste	Applied on the skin	Ringworm, Leucoderma	Jyothi <i>et al.</i> (2010)
<i>Rauvolfia serpentina</i> (L.)	Apocynaceae	Root	Oil Extract	Topical	Ring Worm, Scabies, Leprosy	Chendurpandy <i>et al.</i> (2010)

Table 2: Phytochemicals in use

<i>Plant</i>	<i>Family</i>	<i>Skin benefits</i>	<i>Phytochemicals</i>
<i>Ocimum sanctum</i> (L.)	Lamiaceae	Antibacterial, Antifungal, antiviral, Wound Healing and Anticarcinogenic	Eugenol, Phenolics-Rosameric acid, Apigenin, Circimaritin Flavonoids- Orientin, Luteolin, Vicenin and Monoterpenes- Cholesterol, Stigmasterol, Camphene etc.
<i>Curcuma longa</i> L.	Zingiberaceae	Anti-Inflammatory and Anti-Oxidant	Curcumin, demethoxycurcumin, bisdemethoxycurcumin, D-sabinene, cineol, borneol
<i>Azadirachta indica</i> A. Juss.	Meliaceae	Antiviral, Anti-Helminthic, Anti-Bacterial, Antiseptic, Anti-Inflammatory and Anti-Oxidant.	Amino Acids, Fatty Acids, Azadirachtin, Chlorogenic Acid, Quercetin, Kaempferol derivatives, Myricetin, Nimbidin, Catechin, Epicatechin, Gallic Acid etc.
<i>Aloe vera</i> (L.) Burm. f.	Asphodelaceae	Anti-Microbial, Anti-inflammatory, Anti-Cancer and Wound Healing	Aloesin, Emodin, Aloe-Emodin, Aloin, and Acemannan
<i>Tinospora cordifolia</i>	Menispermaceae	Anti- Inflammatory, Anti- Oxidant, antitoxic, cancer-preventive, immunomodulatory, Anti-allergic	Alkaloids, Diterpenoid Lactones, Glycosides and Steroids

ginseng stimulates the biosynthesis of proteins, RNA, and lipids. Ginkgo *biloba* extract was found to locally induce superoxide dismutase (SOD) and catalase enzyme activity in the epidermis after topical application and turmeric has anti-inflammatory activity by inhibiting leukotriene formation, inhibiting platelet aggregation and stabilizing neutrophilic lysosomal membranes.

Toxicity in Cosmetics

Parabens, Pthalates, SLS-sodium lauroyl sulfate or SLES-sodium dodecoxyethyl sulfate, mineral oil, formaldehyde,

BHT- Butylated hydroxytoluene, lead are few chemicals that are mostly reported from shampoos, moisturizers, face washes, that manifest severe complications in human. Many sunscreens are containing harmful chemicals that not only harm our skin in long term but also harmful for birds and coral reefs. Oxibenzone, octinoxate, OD-PABA are some active ingredients that are toxic to Corals and some fishes, which are present in sunscreens. Some carcinogens are also added in these cosmetics like; formaldehyde, keratin, coal tar, benzene, ethylene oxide, cadmium compounds, triclosan, normally added in hair straightening products,

Table 3: Mostly used products in market according to Amazon, Flipkart, Netmeds.

<i>Acne</i>	<i>Alopecia</i>	<i>Scar Removal</i>	<i>Sunscreens</i>	<i>Shampoos</i>
Biotique Bio Chlorophyll Oil Free Anti-Acne Gel	EasyBloom New Formula	Vaadi Herbals 100% Pure Essential Oil - Anti Acne Scar Removal Serum with Sandalwood Oil	Goddess Garden Organics Everyday SPF 30	PatanjaliKeshKanti Natural Shampoo
CeraVe Acne Foaming Cream Cleanser	King Of Ginger Hair Oil	Natural Vibes Ayurvedic Tea Tree Face Wash	Beauty by Earth Sunscreen Kit SPF 20	IndulekhaBringha Hair Cleanser
Jovees Ayurveda Anti Acne & Pimple Cream - Neem & Long Pepper 60 Gm	Adegen Hair Loss Solutions	Vigini Erase Marks Massage Oil	Badger Unscented Sunscreen SPF 30	WOW Apple Cider Vinegar No Sulphate and Parabens Shampoo
Oshea Herbals Anti Pimple & Acne Cream	UltraGrow Plus Formula	Vigini Erase Marks Massage Cream	White and Elm Everyday SPF 15	St Botanica Biotin & Collagen Volumizing Hair Shampoo
GreenCureAcneSilk Herbal Anti Acne Cream	iRestore Hair Loss Serum	ReequilPitstop Gel for Acne Scars & Pits Removal	Thrive Market Broad Spectrum Mineral Sunscreen SPF 30	Himalaya Herbals Anti Hair Fall Shampoo
Khadi Natural Herbal Face Cream - Acne Pimple	WOW Skin Science Onion Black Seed Hair Oil for Dry Damaged Hair & Growth	Bare Body Essentials Acne Scar Removal Cream	Butter Me Up Organics Organic Sunscreen	OGX Brazilian Keratin Therapy Shampoo
Vaadi Herbals Anti-Acne Cream - Clove & Neem Extract	theMANEthang Hair Growth Oil - Natural Hair Growth Serum	Bio-Oil Glow Combo Suitable for Acne Scar Removal, Pigmentation, And Srtetch Marks	Juice Beauty Sport Sunscreen	SatthwaArgan Oil Shampoo
Mario Badescu Acne Control Kit Tea Tree Oil Face Cream by Majestic Pure – Therapeutic Grade, Acne Scar Remover and Pimple Cream	Life & Pursuits Organic Hair Growth Oil - Ayurvedic Scalp Therapy Oil	ACNESCAR Gel	All Good Sport Sunscreen	Mamaearth Happy Heads Hair Shampoo
Natural Acne Treatment Cream with Benzoyl Peroxide Spot Treatment – Acne Cream for Face & Body – Hormonal & Cystic Acne Pimple Cream – Tea Tree Face Cream for Acne Scars	EssyNaturals Hair Growth Oil with Caffeine and Biotin	MEDERMA SKIN CARE GEL FOR SCARS, ACNE, STRETCH MARKS	Babo Botanicals Zinc Sunscreen Lotion SPF 30 with 100% Mineral Actives	Forest Essentials Bengal Tuberose Hair Cleanser
Chlorophyll Acne Cream Treatment	Mamaearth Onion Oil for Hair Growth & Hair Fall Control with Redensyl	Acne Free Terminator 10 Acne Spot Treatment	COOLA Organic Sunscreen SPF 70 Sunblock Body Lotion	Biotique Bio NeemMargosa Anti Dandruff Shampoo & Conditioner
Cetaphil Acne Face Wash, Gentle Clear Clarifying Acne Cream Cleanser with 2% Salicylic Acid	Kerotin Hair Growth Serum - Intensive Hair Growth Drops Treatment	Derma E Scar Gel	MISTINE AQUA Botanical Care Daily Sunscreen	Khadi Natural Amla And Bhringraj Shampoo (Paraben And SLS Free Shampoo)

hair smoothening gels, have known to trigger cancer in its users. Many beautifying products have steroids, free radicals and neurotoxin like lead, chromium compounds, aluminum salts, retinyl palmitate, methylparaben which have very harmful effects on our brain, and also cardiovascular system (Table 2). Many lipsticks and lip balms have harsh harmful chemicals (Lead, Aluminum compounds) that make them stay on types. Most face powders have asbestos and zinc oxide that too are toxic at prolong uses.

Several other commercialized products that claim they are herbal or plant based (Table 3). However, their efficacy, ingredients need to be standardized and rechecked. Some show good result initially but later compromises our hormonal system, immune system and may trigger reactions that make our body more prone to microbial attacks. Many over the counter drugs even don't mention they have antibiotics and steroids in them, in their ingredient list, but they have tested to contain them in big amounts and cause

late and prolonged chronic results, especially while treating Acne vulgaris, Seborrheic dermatitis, Ketosis of facial skin, Alopecia, allergies etc.

Conclusion

According to the results of the aforementioned study traditional medicine is secure and offers a wide range of therapeutic uses. Many plants are employed for food or medicinal reasons because they have valuable economic properties. They have been on the market for as long as anybody can remember and are said to have several advantages over the detrimental consequences often brought on by synthetic and chemical-based items (Parashar *et al.* 1965). Herbs may be used to create compositions that include preservatives, skin-brightening creams, hair remover, and also treatment for sunburn. Beyond giving the body different shades and nutrition, the herbs indicated above, also address a variety of skin, hair, and general body ailments. We draw the conclusion that only a small number of extracts from most of these plant species are administered orally. The pharmacological effects of the most often referenced plants' extracts on rodents, fungal and bacterial infections, and human cells were also collated. As stated by Ariffin and Hasham (2016), further research and clinical proof are still needed to assess whether the found species may help treat skin conditions. The subject is extremely important since many skin problems are purportedly treated using traditional remedies as an alternative Western treatment. Significant data backs up the effectiveness of conventional formulations, but it's important to keep in mind any potential safety concerns that might arise when using these medications. We anticipate that this article will assist address the rising consumer need for secure, sustainable, and all-natural therapies by fostering the growth of this field and identifying a fresh era of perfectly natural skin treatments. In this regard, systematic and thorough research on plants used in Ethno-dermatology throughout India and worldwide should be increased in order to analyze and evaluate indigenous dermatological treatments that may eventually help develop innovative therapies against skin ailments. The damaging effect of Chemical based cosmetics need to be checked and promotion of Plant based standardized products should be promoted to save our youth and mankind, and also to meet to the exigency for the ever-demanding need for cosmetics products.

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