

REVIEW ARTICLE

Exploring the Potential of Herbs as Skin Care Cosmetics

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ABSTRACT

Herbs have been used in medicine and cosmetics for centuries. Their ability to treat many skin conditions and soothe and improve the appearance of the skin is well known. In the early 2000s, the herbal medicine industry was booming. Herbal ingredients are preferred over pharmaceuticals as they are readily available and have fewer side effects. Natural beauty is a gift, and cosmetics help to develop and improve human beauty and character. Cosmetics alone cannot care for skin and body; it needs a combination of active ingredients to prevent skin damage and aging. Cosmetics are wildly popular with the masses. Herbal cosmetics express their effectiveness and acceptance by the body as they are used regularly in daily life and avoid the negative effects of synthetic products. Continuous use of synthetic compounds on the skin can cause many adverse effects such as skin irritation, allergies, discoloration, acne and skin cancer. But; Medicinal plants used in the preparation of skin cosmetics have many functions such as antibacterial, antiseptic, antibacterial and antifungal. This review article explores the functions of herbal drugs as a potential solution for skin care.

Keywords: Herbs, Cosmetics, Skin care, Function, Antibacterial, Anti-ageing, Anti-Inflammatory.

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INTRODUCTION

Even in areas where modern medicine is available, interest in herbal medicines and their use has grown rapidly in recent years. Plant-derived substances and natural medicines have recently attracted much interest in their flexible use, as medicinal plants are the richest sources of bioactive compounds used in traditional and modern medicinal drugs. (1) Herbal plant products are used as the basis of numerous scientific treatments in humans. Herbal products are not only the most effective, but are remarkably non-toxic and therapeutic doses are well below their toxic levels. (2) Herbal cosmetics, here in after referred as products, are formulated, using various permissible cosmetic ingredients to form the base in which one or more herbal ingredients are used to provide defined cosmetic benefits only, shall be called as "Herbal Cosmetics" (3) Cosmetics are also known as natural cosmetics. Herbal products on the skin are the safest and can protect the skin from the external environment. Gives a looking skin. (4) Cosmetics refers to chemicals and standards applied to the face, hands and other parts of the human body to soothe the skin, beautify the skin. (5) Nowadays, people use cosmetics more and the demand for cosmetics and skin care products is increasing in daily life. Dermatologists confirm that herbal cosmetics are safe to use because they have no side effects and are a more effective treatment. (6) All of the sunscreen, anti-wrinkle, anti-aging, anti-acne and other skin care products on the market are made with natural additives. (7) Creams, perfumes, lotions etc. Cosmetics used to protect and beautify the skin. It improves our appearance without damaging the skin. (8) The word cosmetics comes from the Greek word "kosmtikos", which means to beautify and strengthen. (9) In ancient times it was used as a beautiful color to kill animals and enemies by painting its body to instill fear in enemies. Cosmetics exist in the prehistoric era of hunting,

religion, and combat from 3000 BC. Later, it started to be used as a beauty and health product. Cosmetics are designed to treat various diseases and skin conditions like wrinkles, acne, aging, beauty to control oily skin. The beauty of the skin depends on changes in behavior, health and environment. (10)

Skin

The largest organ of the human body is the skin. The average skin surface area for adults is between 1.5 and 2.0 square meters. The thickness of the skin varies throughout the body and in men. (3 mm) and female (1.26 mm). The skin consists of three main layers: epidermis, dermis and subcutaneous tissue. The pH varies between 4.5 and 6. (11)

Structure of Skin:

Epidermis: It is the outer layer of the skin. The epidermis is devoid of blood vessels and is supported by circulation from the dermis. The main cell types that make up the epidermis are keratinocytes, melanocytes, Langerhans cells and Merkel cells. The epidermis is divided into 5 sublayers or strata,

- Stratum corneum
- Stratum lucidum
- Stratum granulosum
- Stratum spinosum
- Stratum germinativum (also called “stratum basale”).

Dermis: It is the layer of skin under the epidermis that contains epithelial tissue that protects the body against stress and tension. The dermis is tightly connected to the epidermis by the basement membrane. It contains hair follicles, sweat glands, sebaceous glands, and apocrine glands.

Hypodermis: It is not part of the skin and is located under the dermis. Loose tissue consists of adipose tissue and elastin. Cell types of subcutaneous tissue are fibroblasts, macrophages and adipocytes. Fat acts as body filler and insulator (12)

Functions of Skin:

- Protect
- Feel
- Control temperature
- Control evaporation
- Absorption
- Water resistance. (13)

SKIN TYPES & THEIR CARE:

Table 1: Skin types & their care

Skin type	Characteristics	Suitable skin care
Normal skin	Has even tone, soft, smooth, no visible pores, no greasy patches or flaky areas. Has clear, fine, supple and smooth surface which is neither oily or dry.	Herbal- Pomegranate leaves juice, gingili oil. Essential oils- Chamomile, Lavender, lemon.
Dry skin	Low level of sebum and prone to sensitivity. Has parched look, feels tight. Chapping sign cracking of dehydrated and extremely dry skin.	Herbal- Calendula, Olive oil, Aloe vera. Essential oils- Fennel, Rose oil, Almond oil, Sandal wood, Avacado.
Oily skin	Shiny, thick and dull complexion. Coarse pores and pimples and other embarrassing blemishes. Prone to black heads.	Herbal- Rose buds, Oat straw, Thyme, Chamomile, Aloe vera, Lemon grass. Essential oils- Juniper, Lemon, Lavender, sage.
Combination skin	Some parts of your face are dry or flaky, while the centre part of face, nose, chin and forehead is oily	Herbals- Menthol, Turmeric, Sweet flag, Aloe vera. Essential oils- Citrous oil, Jasmine, Sandal wood oil.

HERBS FOR SKIN CARE:

ANTI-OXIDANT:

Many plants and their products have been used as medicine since ancient times. Many studies have been conducted on the properties and methods of this plant extract in skin care. Natural antioxidants that scavenge free radicals are an essential part of anti-aging medicine. They can protect against tissue damage from the environment and other factors. (14) Many natural oils, such as canola oil, sunflower oil, and soybean oil, are rich in polyunsaturated fatty acids, especially linoleic acid and linoleic acid. These

natural oils are very important and are also used as emollients in skin care products. Natural oils such as bergamot, lavender, rose, marjoram, chamomile also have proven beauty benefits with activities such as anti-tyrosinase, anti-elastase, and antioxidant. (15) Application of different herbs, especially flavonoids, has been found to reduce skin inflammation and chronic pain. Flavonoids such as apigenin, catechin, epicatechin, glycosylated rutin and silymarin are polyphenolic substances found in fruits and plants with antioxidant potential due to the free phenolic group. (16)

ANTI-INFLAMMATORY:

Inhibiting inflammation is a great way to slow or reverse the signs of aging. Olibanum, the resin of the *Boswellia* plant *Boswellia serrata*, has been used for centuries as an aromatic herb and is now used in perfumes, soaps, creams, lotions and hand sanitizers. In India, the gum resinous exudate of *Boswellia Serrata*, known locally as Salai Guggual, has been used as an anti-inflammatory agent in the Ayurvedic system of medicine. Boswellin is easy to use in cosmetics and has a pleasant aroma that blends well with formulations. (17) Licorice (*G. Glabra*), Marigold (*C. Officinale*), Varruna (*C. Nurvala*), etc. Thromboxanes, leukotrienes, and prostaglandins are powerful anti-inflammatory drugs commonly used in the treatment of diseases. (18) Some herbs are used as cosmeceuticals in sunscreens for their protective properties. These herbal ingredients act directly on the main process of skin inflammation during and after sun exposure.

ANTI-AGEING:

Natural anti-aging skin products aim to slow or reverse the signs of aging. The ingredients used for this purpose are derived from natural extracts with a long history of traditional use. Changes in skin contours, whether due to external or internal oxidative stress, are always a sign of the aging process. In addition to external inducers of oxidative attack, the skin must respond to endogenous reactive oxygen species (ROS) and other free radicals that are constantly produced during physiological cellular metabolism. To prevent the negative effects of ROS, the skin is equipped with an antioxidant system that maintains the balance between peroxides and antioxidants. Several primary (anti-vitamin C) and secondary (preventive, vitamin E) antioxidants have been developed to form a network of antioxidant compounds, as described for improving the skin. Natural components participate in biochemical reactions that occur in the body during cellular aging. The roots of biochemical reactions that accelerate the aging process of the skin are in the inflammatory process, which creates microscopic scars that turn into spots or wrinkles. They can protect against tissue damage. Various inflammatory mediators such as leukotrienes and prostaglandins, cytokines and growth factors can affect melanin synthesis by affecting the growth and function of melanocytes. (19) Cytokines such as endothelin (also known as vascular peptides) have also been reported to accelerate melanogenesis. Natural anti-inflammatory ingredients are included in the anti-aging formula to soothe, heal and protect skin and integrity. (20) In addition, the natural oil is a good source of tocopherol and phytosterol components, which provide antioxidant activity and bioactivity to skin care formulas. Anti-wrinkle eye creams help prevent signs of aging and often contain wheat germ and corn oil, hydroalene and carrot extract. Eye Firming Liquid contains Algae to help skin maintain its elasticity.

ANTI- MICROBIAL:

Natural antiseptics such as rosemary extract, sage extract, olive leaf extract, certain mushroom extracts, spice essential oils, and probiotics are also good deodorants. In cosmetics, antibiotics are used to treat skin, hair, and nail infections and to extend the shelf life of cosmetics. In self-healing formulations for skin conditions such as acne, there is a need to add beneficial ingredients that have a long history of cosmetic use and have fewer side effects. With the increasing use of antibiotics against microbial infections and the understanding of the side effects associated with long-term antibiotic use, natural ingredients including essential oils Panic, probiotics and plant extracts are attractive options for the use of antibacterial drugs. extract of *C. Longa*, *C. Zeylanicum*, *C. Tora*, *C. Asiatica*, *P. Corlifolia* and long-chain alcohols, natural phenolic compounds with bactericidal/fungicidal potential that inhibit microbial growth or compete for synthetic product. (21)

ANTI-IRRITANT:

Plant extracts are also anti-irritant and help maintain the beauty and tone of the skin. Application of essential fatty acids has been shown to improve hydration and elasticity and help prevent skin breakdown. Such fatty acids are reported to work on the skin as anti-inflammatory and anti-inflammatory agents. (22) Recent findings have confirmed that long-chain fatty acids also have anti-aging properties. The application of essential fatty acids has been found to improve hydration and elasticity and help prevent skin damage in people who are malnourished. (23) Other ingredients include Blackthorn, Chamomile, Vitamin E, Antioxidant Vitamins A, C and E, Green Tea and Tiare Flower, *Ginkgo Biloba* and Cucumber, Calendula and Alfalfa. The active ingredient of chamomile has been used to soothe irradiated

skin. Alosain (an algae extract), the main ingredient in Eye Lifting Moisturizer, treats puffiness. It also prevents future skin damage and helps smooth out wrinkles.

VITAMINS:

Dietary ascorbic acid is absorbed and distributed in the body within an hour. The biochemical importance of vitamin C in cosmetics is mainly based on its reducing capacity, as it is required for many hydroxylations. Several hydroxylases involved in collagen synthesis require ascorbic acid as a reducing agent. In human skin dependent on dietary vitamin C, the epidermis apparently contains about five times more vitamin C than the dermis. (24) The main lipophilic antioxidant is vitamin E, which combines about eight molecules (four tocopherols and four tocotrienols) with antioxidant activity. In human skin, K-tocopherol is the most abundant vitamin E analog, followed by L-tocopherol. Vitamin E acts as an antioxidant by eliminating free radicals that can directly or indirectly initiate (HO^* and O^*2) or promote lipid chain reactions (lipid peroxy radicals). Tocopherols are often used in foods and the skin produces important antioxidants. Its main function in vegetable oils is to protect polyunsaturated fatty acids from oxidation during storage. Tocopherols are the main fat-soluble antioxidants in the human skin, human stratum corneum, where they are a part of the natural defense system. They protect cellular components such as DNA, proteins and lipids from free radicals and reactive oxygen species caused by UV radiation, pro-oxidative environment and air pollution. (25,26,27)

EMOLLIENTS:

Emollients soften the skin and moisturizers add moisture. They are used to treat dry and flaky skin, fine lines and wrinkles, and mildly irritating contact dermatitis. The terms "moisturizing" and "emollient" are used interchangeably as they describe the different effects of these substances on the skin. They basically serve two purposes: Occlusives that form a layer of oil on the skin, slowing water down, thereby increasing the moisture of the stratum corneum. Humidifiers are substances that enter the stratum corneum so that it can retain water. Some moisturizers contain both an occlusive and a humectant. Softeners contain monounsaturated jojoba esters for cosmetic purposes. (28) Some of these ingredients include black cohosh, soybean extract, and vitamins A and E. There are nutritional products on the market for skin nourishment that contain hyaluronic acid, a mixture of green tea extract and glutathione, and regenerative processes. (29) Natural phospholipids derived from lecithin are excellent humectants. An important advantage of phospholipids is that they are hygroscopic (they absorb water from the surrounding air) and retain water that needs to be hydrated. Therefore, phospholipids increase skin hydration rather than occlusive. A recent study demonstrated the benefits of topical application of phospholipids in skincare. He found that environmental factors (sun, wind, pollution) as well as detergents and solvents in most skin cleansers can remove natural phospholipids from the top layer of the skin. This loss results in a rough and microscopically pitted appearance. More importantly, phospholipids in the upper layer of the skin cannot be altered by cellular functions because cells in the upper layer are not metabolized; they are used only as preventive measures.

SOME EXAMPLES OF HERBS USED AS SKIN CARE COSMETICS:

The examples of herbs used as skin care cosmetics is given in table no. 02.

Table No.02: Examples of Herbs used as skin care cosmetics.

Herbal Drugs used as an Anti-oxidants					
Sr. No.	Plant Name/ Family	Common Name	Chemical Constituent	Uses	References
1)	<i>Mangifera indica</i> Anacardiaceae	Aam	Mangiferin, isomangiferin, tannins, gallic acid, catechin, mangiferin, alanine, glycine, γ -aminobutyric acid, kinic acid, shikimic acid.	Plant extract possesses anti-oxidant properties	30,31
2)	<i>Momordica charantia</i> Cucurbitaceae	Karela	Momordicin I, momordicin II, cucurbitacin B, momordin, charantin, charantosides, momordicinin, momordicilin, momordenol, momordol, momorcharin, momordin	Plant extract possesses antioxidant properties	32,33
3)	<i>Phyllanthus emblica</i> Euphorbiaceae	Amla	Ellagitannins, emblicanin A, emblicanin B, punigluconin, pedunculagin, punicafolin, phyllanemblinin A, phyllanemblin,	Fruit extract possesses anti-oxidant properties	34,35

			ellagic acid, gallic acid		
4)	<i>Santalum album</i> Santalaceae	Chandan	Alpha- and beta-santalol, cedrol, esters, aldehydes, phytosterols, squalene	Paste of hardwood is used in face pack; essential oil used in preparation of creams, ointments and lotions for skin beautification and protection from sunburn; possesses anti-oxidant properties	36-39
5)	<i>Swertia chirayita</i> Gentianaceae	Cheretta	Triterpene swertanone, seco-hopene lactones, swertiamarin swertia lactone – C, swertain – D	Bark powder extract controls skin affections; possesses antioxidant properties	40,41
6)	<i>Withania somnifera</i> Solanaceae	Aswagandha	Withanolides, (-)- sominolide, mindabeolide-1, withanolide-R, flabelline, corydaldine, Oxyhydrastine, fumaritine, protopine, fumariline, juziphine, tetrahydropalmatine, N-feruloyl tyramine, (+)- bicuccline, (-) corlumine	Whole plant extract is used in skin cleansing formulations and possesses antioxidant properties	42,43
Herbal Drugs used as an Anti-inflammatory					
7)	<i>Curcuma longa</i> Zingiberaceae	Haldi	Curcumin, turmerone and zingiberene; cineole and p-tolylmethyl carbinol α - phellantrene, terpinolene, 1,8-cineole, undecanol and p-cymene	Rhizome powder possesses anti-inflammatory and anti-oxidant properties; used in facial, face creams and ointments	44,45
8)	<i>Glycyrrhiza glabra</i> Fabiaceae	Mulaithi	glycyrrhizin, 18 β -glycyrrhetic acid, glabrin A and B, and isoflavones	Anti-Inflammatory properties	46
9)	<i>Calendula officinalis</i> Asteraceae	Zerul	The flowers of <i>C. officinalis</i> contain flavonol glycosides, triterpene oligoglycosides, oleanane-type triterpene glycosides, saponins, and a sesquiterpene glucoside.	Anti-Inflammatory properties	47,48
Herbal Drugs used as an Anti-ageing					
10)	<i>Juniperus Communis</i> Cupressaceae	Aaraar	Monoterpene hydrocarbons, sabinene, α -pinene and limonene 44	Whole plant extract is useful in skin creams to control skin rejuvenation	49,50
11)	<i>Zea mays</i> Poaceae	Makka	Luxuriantes, <i>Zea perennis</i> , <i>Zea diploperennis</i> , <i>Zea luxurians</i>	Stigma extract is used in creams and lotions for skin rejuvenation	51,52
12)	<i>Sesamum indicum</i> Pedaliaceae	Til	Latifonin, momor- cerebroside, soya- cerebroside II, beta- sitosterol, daucosterol, D-galacitol	Seed extract is useful for skin protection and rejuvenation	53,54
13)	<i>Ocimum sanctum</i> Lamiaceae	Tulsi	Eugenol, epi- α -cadinol, α -bergamotene, γ -cadinene	Leaves extract is useful to control skin infection and rejuvenation	55,56
Herbal Drugs used as an Anti-microbial					
14)	<i>Azadirachta indica</i> Meliaceae	Neem	Di-n-propyl disulfide, 1-cinnamoylmelianolone, Isonimolicinolide, nimolicinoic acid	Bark, seed, fruits and leaves contain diterpenes and highly oxidized tetraner warmer parts	57

				triterpenoids including azadirachtin; antiseptic agent; useful in curing wounds, skin diseases, leprosy, ulcers etc	
15)	<i>Allium sativum</i> Alliaceae	Garlic	Llicin, phytoncidea, alliin, ajoene, isoalliin, methiin, alliin.	Garlic oil is useful to control sores, pimples and acne. It may be used in skin lotions and creams	58
16)	<i>Curcuma longa</i> Zingiberaceae	Haldi	Curcumin, turmerone and zingiberene; cineole and p-tolylmethyl carbinol α -phellantrene, terpinolene, 1,8-cineole, undecanol and p-cymene	Rhizome powder possesses anti-inflammatory and anti-oxidant properties; used in facial, face creams and ointments	59
Herbal Drugs used as an Anti-irritant					
17)	<i>Camellia sinensis</i> theaceae	Green Tea	epigallocatechin gallate (EGCG), epicatechin gallate, epicatechins and flavanols,[1]	Green tea's anti-inflammatory properties can help reduce skin irritation, skin redness, and swelling.	60
18)	<i>Matricaria</i> <i>Asteraceae</i>	Chamomile	<u>apigenin</u> , <u>quercetin</u> , <u>patuletin</u> , and <u>luteolin</u>	it help reduce signs of aging by protecting the skin from free radical damage.	61
Herbal Drugs used as Vitamins					
19)	<i>Genus Arctium</i> Asteraceae	Burdock Root	Burdock Root Botanical Extract is high in Vitamins B and E	It is used in personal care products to deep clean the pores, and purify the surface of the skin. Traditionally, it has been used in herbal creams and is considered a great addition to hair care products	62
20)	<i>Cucumis sativus</i> Cucurbitaceae	Cucumber Peel	it is a rich source of vitamins and minerals essential for a healthy looking skin	Calm and cooling, Cucumber Peel extract makes a wonderful addition to skin care products for its toning and skin tightening properties	62
21)	<i>Lepidium meyenii</i>	Maca	is loaded with beneficial nutrients, including Vitamins (B1, B2, C, E), minerals and trace elements	This amazing extract is rapidly gaining a reputation for its ability to promote a healthy looking, radiant complexion. It promotes elasticity and maintains the suppleness of the skin, leaving it firmer, smoother and younger looking	62
22)	<i>Cocos nucifera</i>	Nariyal	Sugars, vitamins, minerals, amino acids and phytohormones	Coconut oil is useful for skin itching and rashes	63

	Arecaceae				
Herbal Drugs used as an Emollients					
23)	<i>Aloe vera</i> Liliaceae	Ghikanwar	Hydroxyanthroquinone – barbaloin, y – hydroxyaloin isomers, aloe emodin, chrysophanol, loins, Barbaloin, Isobarbaloin, Aloin	Leaves juice, its pulp or extracted material is applied on skin for smoothness, healing controlling skin burn, sun burn and injury Used in moisturizers, lotions, creams, hair tonic, shaving creams, etc	64
24)	<i>Genus</i> <i>Hippophae</i>	Sea Buckthorn	Rich in numerous Vitamins, pro- vitamins, antioxidants, and skin emollient properties	Sea Buckthorn extract is a unique ingredient with naturally occurring reservoir of skin friendly nutrients. Its an excellent addition to many topical skin care applications, especially in products for mature skin.	62

CONCLUSION

Herbal products are used as the basis of many treatments for humans. Herbal products are not only the best, but they are essentially non-toxic and have good medicinal properties under the toxic levels. In recent years, scientists and doctors have taken an interest in the surviving form of Ayurvedic medicine. Looking at the worldview of Ayurvedic preparations, medicinal plants used to treat various ailments occupy a large part of the market. More than 70% of the population in India uses cosmetics for their health. Today, herbal cosmetics have entered into personal care and there is a great demand for cosmetic products in daily life. Healthy teeth, shiny hair and shiny skin play an important role in the beauty of the human body. Herbal cosmetics are based on the use of beauty ingredients, in which one and the other herbal ingredients are used to treat different diseases of the skin and beauty. The chemical production of all these cosmetics involves the addition of many natural substances such as waxes, oils, natural colors, natural fragrances and plant parts such as leaves and others. Cosmetics are items that fall between the cosmetics (lipstick and blush) and pure drug (antibiotics, corticosteroids) approach. Natural cosmetics prepared as therapeutic formulations with cosmetic value or safe additive properties rather than synthetic ingredients. More research and development are needed in the cosmetic industry to prove the efficacy and safety of cosmetics. Adequate safety assessment based on current regulations and applicable regulations is required. Getting the right cosmetics for you depends on the actual product, body composition analysis, personal needs, consumer opinion and measuring equipment. Quality control of the strength and safety of cosmetic products is important. Therefore, good management of herbal cosmetics is important. It is considered safe for a longer period of time.

Conflict of Interest: Nil

Author Contributions:

All authors contributed equally to the research, writing, and review of this manuscript.

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