



An Updated Review on Herbs for Dermal Care



Megha Negi¹, Bhavana Singh^{2*}, Deepika Joshi³ and Nidhi Semwal⁴

School of Pharmaceutical Science, SGRR University, Dehradun, India

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*Corresponding author: Dr. Bhavana Singh, Assistant Professor; School of Pharmaceutical Science, University, Dehradun, India

Abstract

The popularity of herbal cosmetics in society and the technological advancement in the production process have led to market downturn in herbal medicine. Recently herbal cosmetics have gained a lot of recognition and are known to the people. These products claim to be effective and internally accepted due to their normal use in daily life and do not have the side effects commonly seen with synthetic products. The herbs used to prepare these skin cosmetics have many functions such as antioxidant, anti-inflammatory, antiseptic and antimicrobial. This paper will review the state of the art of herbal cosmetics and scientific data as well as the important cosmetic value of herbs that can be used in the preparation of these properties.

Keywords: Herbal Cosmetics; Skin Cosmetics; Antioxidant; Anti-inflammatory; Ant aging

Introduction

Many plants have been used in traditional medicine for several thousand years. Historically all medicinal preparations are taken from plants, either in the simplest form of plant parts or in the complex form of illegal substances, mixtures, etc. profound therapeutic benefits and less expensive treatments [1]. Nearly 200 years ago our pharmacopoeia was dominated by herbal remedies and about 25% of the world's medicinal plants came from plants. Many herbal remedies used in traditional medicine are more readily available in rural areas than in conventional medicine. Extracts from plants used to prepare drugs can be found in various parts such as roots, leaves, shoots and plant bark. Modern drugs used today are based on natural chemicals [2]. The use of medicinal plants to treat skin conditions is widespread. Traditional medicine has played an important role in the management of skin conditions. Hundreds of medicinal plants around the world are used in traditional medicine to treat skin diseases caused by bacteria, fungi and viruses [3]. In India, records of Ayurvedic medicine date back to about 3000 BC. The Ayurvedic medicine system combines physical and complete principles. It is based on the idea that the human body has five components that make up the universe:

- a. Earth
- b. Water

- c. Fire
- d. Air
- e. Space

The interaction of these five elements raises three dosages (forces), seven dhatus (tissue), and three malas (waste products). All diseases are caused by an imbalance between the three doses. The diagnosis is made by a comprehensive program of physical examination, heart rate, and urine tests, as well as eight detailed tests to assess both physical and psychological aspects of the condition. Treatment is then tailored to the individual according to the findings [4]. Skin diseases have been a major concern in recent times because of their association with Human Immunodeficiency Virus and Acquired Immunity Deficiency Syndrome (HIV / AIDS). South Africa (north of Maputaland) has a very high rate of HIV infection, which makes them more susceptible to various skin conditions. Fungal infections due to the hot climate and overcrowding of families are common in this area, as well as burns as a result of using wood as a major cooking fuel. It is well-known that the common people in this area rely on medicinal plants for basic health care. However, no research has been conducted in northern Maputaland to document the medicinal plants used to treat various skin ailments [2].

Anatomy and Physiology of Skin

The human skin, the outer covering of the body, is the largest organ in the body. It is also the first line of defense. The skin contains many specialized cells and structures. It is divided into three main layers namely. Epidermis, dermis and hypodermis. Each layer provides a different role in the overall function of the skin [5].

Three layers of skin:

i. Epidermis

the outermost layer of skin
composed of epithelial tissue
contributes to skin tone

ii. Dermis

found beneath the epidermis
primarily composed of connective tissue
contains hair follicles, blood vessels, lymphatic vessels and sweat glands

iii. Subcutaneous Tissue (Hypodermis)

Made of fat and connective tissue.

Epidermis

The epidermis further divided into 5 layers on thick skin like the palms and soles:-

- a. Stratum corneum – many layers of flat, dead, scale like cells full of keratin
- b. Stratum lucidum – one or two layers of dying cells
- c. Stratum granulosum – three or four layers of skin; actively synthesizing protein keratin
- d. Stratum spinosum – three or four layers of cells with some cell division
- e. Stratum basale – single row of dividing cells (columnar cells)
- f. While in other places, the epidermis has four layers lacking the stratum lucidum.

Dermis

The dermis is divided into 2 layers:-

- a. Papillary dermis (the upper layer)
- b. Reticular dermis (the lower layer)
- c. Contains many types of sensory receptors for touch, pressure, vibration, pain, temperature etc.
- d. Papillary layer is folded into ridges which extend into upper epidermal layer. The exposed ridges form congenital

patterns called finger prints and foot prints.

- e. Reticular layer contains collagen elastic and reticular fibers [6].

Subcutaneous Tissue

Lies below the dermis and is not part of skin. It attaches the skin to underlying tissue such as muscle and bone. The subcutaneous tissue contains loose fat cells that provide insulation.

The anatomic distribution of subcutaneous tissue varies according to gender, hereditary, age, nutritional status. Thus layer also stores lipids, regulates temperature, and provides shock absorption [7].

Functions of the skin include

- a. Protection against microorganisms, dehydration, ultraviolet light, and mechanical damage. Skin is the first physical barrier that the human body has against the external environment.
- b. Sensation to pain, temperature, touch, and deep pressure.
- c. Mobility allowing smooth movement of the body.
- d. Endocrine activity. The skin initiates the biochemical processes involved in Vitamin D production, which is essential for calcium absorption and normal bone metabolism.
- e. Exocrine activity by the release of water, urea, and ammonia. Skin secretes products like sebum, sweat, and pheromones and also exerts important immunologic functions by the secretions of bioactive substances such as cytokines.
- f. Immunity development against pathogens.
- g. Regulation of Temperature. Skin participates in thermal regulation by conserving or releasing heat and helps maintain the body's water and homeostatic balance [8].

Herbal Treatments for Dermatological Disorders

Dermatitis is a common disease and affects all ages from neonate to adults and causes injuries in many ways. There are more than a thousand cases that can affect the skin but most skin diseases can be divided into nine common types:

Rashes

An eruption is the area of red, burning skin or a group of individual spots. This can be caused by irritation, allergies, infections, the underlying disease, and structural defects for example, clogged pores or dysfunctional glands. Examples of rash include acne, dermatitis, eczema, pneumonia, pityriasis rosea and psoriasis [9].

Viral infections

This occurs when the virus enters the stratum corneum and infects the inner layers of the skin. It cannot be treated with antibiotics. Examples of skin infections caused by viruses include herpes simplex, shingles (herpes zoster) and warts. Other

scheduled infections, such as chicken pox and measles, can also affect the skin [10].

Bacterial infection

Such infections are caused by a variety of viruses, the most common types being staphylococci and streptococci. Bacteria can affect the upper layers of the skin, follicles, or deeper layers of the skin. It is best treated with antibiotics. Examples include impetigo, folliculitis, cellulitis and Lyme disease [11].

Fungal infections

Harmless fungi are always present on the surface of the skin. Infection occurs when these organisms enter the body. These infections often spread to the surface, affecting the skin, hair, nails and in the athlete's foot, biting key and fetus. However, in people with a weakened immune system or who have been taking antibiotics for a long time - the fungus can spread to deeper levels, causing more serious infections [12].

Trauma

Trauma describes an injury to the skin caused by a blow, a cut, or a burn. Whenever the surface of the skin is broken, the body becomes more susceptible to infection and disease [13].

Dermatophytosis

Dermatophytosis is a dermatologic problem with zoonotic risk. On the basis of primary habits there are three classes of dermatophytes, geophilic, zoophilic and anthropophilic. Dermatophytosis has world wide distribution and the causative agents are *Microsporum*, *Trichophyton* and *epidermaphyton* spp. *Microsporum canis* (*M.canis*) is the most common cause of dermatophytosis in animals and human [14].

Parasitic infection

These infections occur after exposure to parasites such as lice and scabies [12].

Pigmentation disorder

The amount of pigment in the skin is determined by the amount of melanin being produced by the body. Loss of pigment (hypo- pigmentation) can be caused by absence of melanocytes, malfunctioning cells, exposure to cold or chemicals, or some types of infection. An increase in pigment (hyper- pigmentation) may be caused by skin irritation, hormonal changes, aging, a metabolic disorder, or any other underlying problem. Age spots, freckles and melasma are examples of hyper pigmentation and vitiligo is an example of hypo pigmentation [11].

Tumors and cancers

This growth occurs when skin cells begin to multiply faster than normal. Not all skin growth is cancerous. Some plants are harmless and will not spread. Skin cancer is the most common cancer, affecting 800,000 Americans each year. It is caused, in 90% of cases, by sun exposure. Three types of skin cancer are

basal cell cancer (the most treatable), cell cancer (which can grow and spread) and fatal melanoma (the most dangerous form). Prevention involves protecting the skin from damage from ultraviolet radiation. Early detection helps improve the chances of treatment [15].

Other conditions

Wrinkles, rosacea, spider veins, and varicose veins are just some of the conditions that cannot be distinguished. Wrinkles are caused by the breakdown of collagen and elastin within the skin, leading to abrasions. Rosacea is an incurable disease in which the facial skin becomes red and has acne, sores and abnormal nasal enlargement. The cause is unknown. Spider veins and varicose veins are seen when blood vessels enlarge and appear on the surface of the skin [16].

Herbal Drugs for Skin Disorders

Herbs With Anti -Acne Effects

Acne develops when pores become clogged or infected with bacteria. Acne is the most common skin condition, affecting around 80 percent of people in their lifetime.

Green Tea

Green tea comes from the tea plant *Camellia sinensis*, which belongs to the family *Theaceae*. It contains a high concentration of polyphenolic antioxidants called catechins. To the majority of people with acne will produce a lot of sebum and build up, or natural body oils in their pores, and the feeling that they get plenty of antioxidants. Sebum secretion is associated with the hormonal activity in the body, and the excess production of sebum causes of skin disorders such as acne. Antioxidants help the body in the breaking down of chemicals and hazardous waste which can damage healthy cells. Green tea cleanses the body from the debris and waste, which will make that acne breakouts. It contains substances that help to reduce sebum production, and inflammation. The components of green tea, which are expressed as a weight percentage of the dry weight of extract, 30% -42% catechins, which is 5% to 10% flavonols, and 2%-4% of the other flavonoids. Catechins are divided into catechins, epicatechins, epicatechin-gallates, epigallocatechin, and epigallocatechin-3-gallate, which are mainly responsible for the antioxidant properties of green tea. Green tea is also available in the form of a regulation, and a moisturizing balm [17].

Manjishtha

It is found in the roots of *Rubia cordifolia* belonging to the *Rubiaceae* family. It is known as an effective blood purifier and is therefore widely used in the fight against blood, skin and urinary tract infections and is used externally for severe burns, mixed with honey and stains and features. It is a powerful remedy for serious skin diseases. Methanolic extract of *Rubia cordifolia* prevents the increase in acne. It is moderately effective against tumor necrosis factor alpha (TNF alpha) and shows low activity against interleukin 8 (IL-8). It is considered an astringent and treats

external inflammation such as sores and skin diseases. The rich anthraquinone content of the plant in gel formation shows anti-acne properties against *Propionibacterium acne*, *Staphylococcus epidermidis*, and *Malassezia furfur*, compared to the common Clindamycin gel. Manjishtha is available in the form of gel and oil [18].

Herbs with Anti-Inflammatory Effects

Inflammation is the body's immune response to harmful substances such as disease or tissue damage. The uncontrolled reaction of inflammation is a major cause of the persistent progression of problems such as allergies [19].

Aloe-vera

It is found in the dried latex of *Aloe barbadensis* leaves belonging to the family *Xanthorrhoeaceae*. Aloe vera inhibits the cyclooxygenase pathway and reduces the production of prostaglandin E2 from arachidonic acid. It is used in the form of cooling gels and is often regarded as a health drink. It is also found in the treatment of wrinkles, stretch marks, and pigmentation. It is also shown to be able to speed up wound healing by improving blood circulation in the area and preventing cell death in the wound [20].

Sandalwood

It is the dried wood of *Santalum album* family *Salalaceae* used mainly in religious traditions as a fragrance and also used as a flavouring agent in Ayurvedic medicine to treat the inflammatory reaction that triggers various skin disorders. In addition, it has been used as an astringent. Used in the form of face pockets, masks, etc [21].

Herbs with Anti-Oxidant Effects

The concept of antioxidant refers to ways to prevent "free" reactions. Such "radicals" have been shown to affect all biochemical substances such as DNA / RNA, carbohydrates, incomplete lipids, proteins and micronutrients such as carotenoids, vitamins A, B6, B12, and folate [22].

Amla

It is found in the dried and fresh fruit of the plant *Emblica officinalis* belonging to the family *Euphorbiaceae*. The environment has provided you with antioxidant protection mechanisms, superoxide dismutase, catalase, glutathione, GSH peroxidases, reductase, Vitamin E, Vitamin C, etc., and certain nutrients. The various potential uses of an antioxidant or a free deception in the prevention or control of diseases have been revealed by several investigators. Fruit extract produces good responses to total phenol, complete flavonoids and complete tannin testing used in the form of scrubs [23].

Rosemary (*Rosmarinus officinalis* / family - *Lamiaceae*)

It is a rich source of phenolic chemicals and its properties are found in its extracts and essential oils. The extract of rosemary

also contains several antioxidant and various nutrients such as phenolic acid, flavonoids, and diterpenoids. There are seven major flavonoids in rosemary leaves, flowers, roots and stem. Rosemary oil gives the skin water, which helps regulate oil production. It also provides an antiseptic to the skin, keeping acne from working. It plays a vital role in the fight against aging [24].

Herbs with Anti-Wrinkle Effects

The herbal ingredients present in herbal cosmetics affect the biological functions of the skin and provide the nutrients needed for healthy skin. Significant efforts associated with medicinal plants with a scientifically proven method lead to the emergence of cosmeceuticals novels to prevent degradation [25].

Apricot

It is a dried seed of *Prunus armeniaca* belonging to the *Rosaceae* family. Vitamins A, C, and E, β -carotene and selenium content of apricots have shown anti-wrinkle properties. The total oil content of its grains ranges from 40.23 to 53.19%. Oleic acid accounted for 70.83%, followed by linoleic acid 21.96%, palmitic acid 4.92% and stearic acid 1.21% as fatty acids. In one study it was reported that seed oil was a rich source of P, Ca, Mg, Fe and Cu, and contained 73.58% oleic acid. It is used in the form of a sheet or a scrub [26].

Herbs with Depigmentation Effects

Skin remodelling lightening of the skin, or loss of color. Skin modification is due to many local and systemic conditions. Loss of pigment can be partial or complete. It can be as temporary as tinea versicolor or permanent as albinism.

Papaya

Papaya is a dried and refined latex found in the sour juice of unripe *Carica papaya* linn of the *Carcaceae* family. Other components of the papaya leaf are myrosin, alkaloids, rutin, resin, tannins, carpaine, dehydrocarpaine and pseudocarpaine enzyme, ascorbic acid and saponins. Aliphatic hydrocarbons are fragrant that contribute to the scent. On the other hand, the following carotenoid and vitamin C increase in maturity such as lycopene, β -criptoxanthin, and β -carotene. Carotenoids help to rejuvenate the skin, which is often used as a face wash, and also help remove tan [27].

Cucumber

It is derived from *Cucumis sativus* plant, which belongs to the *Cucurbits* family. The extract is rich in vitamins, especially vitamin C and A, which are some of the cosmetic benefits for the skin, and, therefore, it has been used for the production of sheet metal parts, masks, and gel. Mexico has a great potential to be used for cooling, the healing of the irritated skin from the sun or from the skin of the blast. Cucumber extract is often used for skin problems, wrinkles, sunburn, and as an anti-oxidant. Cucumber extract is a great skin care product. The sap consists mainly of proteins, lipids, vitamin C, and a variety of minerals, and it has moisturizing and softening

properties. It also has an astringent effect, and can soothe and reduce swelling of the skin.

Astringents

Constringent are chemical compounds that will help to close the pores, and the small ones. The separators are used for the treatment of skin irritations, such as acne. They can also be used for relief of allergies, insect bites, and fungal infections. Ligaments are working well on oily skin [28].

Witch Hazel (*Hammamelis Virginiana*)

Witch hazel is an excellent herb with high tannins, and an excellent herbal astringent. The leaves and bark are very beneficial. Witch hazel is used to protect the skin and vegetables can be used to protect future blemishes [25].

White Oak (*Quercus Alba*)

As a powerful astringent, and white oak is a huge tree, native to North America. A powerful astringent properties are hidden in the shell. This is also an important source of tannin and iron. White oak is also used for making skin care products. It is well known that the white oak, treat infections, and protects against harmful bacteria.

Herbs Used for Anti-aging Treatment

Carrot

It is found in the *Daucus carota* plant belonging to the family Apiaceae. It is a valuable medicine because of its richness in Vitamin A. Carrot seed oil is used as an anti-aging, rejuvenating and rejuvenating. It gets its bright orange color from β -carotene and small amounts of α -carotene and γ -carotene. α and β -carotenes are partly made up of Vitamin A. It is available in the form of packets and lotions [26].

Ginkgo

It comes from the ginkgo biloba tree, a *Ginkgo biloba*, which belongs to the family Ginkgoaceae. It is best known as a tonic for the heart and cardiovascular system, in particular, in order to strengthen the small blood vessels in the internal organs, especially the brain. Arteries are more elastic, it decreases with age, so the more oxygen in the organs and in the skin. Ginkgo biloba is used both as a micro-view.

Herbs with Sunscreen Effects

The shades are really popular in this day and age. Once upon a time, people were given a nice splash of colour and easily, without the risk of getting sunburn. At the moment, it is necessary to use sunscreens that protect against UV rays.

Pumpkin (*Cucurbita pepo* / family - *Cucurbitaceae*)

A lipid profile of the seeds, contain high levels of linoleic acid (43-53%), there are two classes of antioxidant compounds: Tocopherols and phenolic compounds, which accounts for about 59% of the anti-oxidant effects. A natural sunscreen that filters

out of the skin of the protein and peptide bonds compounds that absorb lipids and nucleotides. It is used as a moisturizing mask and a serum. With a high concentration of plant peptides to protect the peptide bonds of the skin and whites. Pepo pumpkin seed oil, it deserves greater recognition both in the form of masks, as well as in the form of a regulation [29].

Walnut

This extract is made from the green shells of the English walnut, *Juglans regia* of the *Juglandaceae* family. Liquid extraction acts as a sun protection agent. It's most important component is juglone, naphthol which is closely related to -one-on-one. Juglone is known to break down the keratin proteins present in the skin to form sclerojuglonic compounds. These are colored and have UV protection properties. It is used in the form of scrubs to reduce sun damage to the skin [25].

Herbs with Antiseptics Effects

Natural antibiotics are used to kill or prevent the growth of microorganisms when applied to the skin or living skin. Antiseptic therapies reduce the risk of infection, sepsis or rot. Plants are a rich source of antibacterial agents that have chemical protection against food or infection. *Morus Alba*, *Ocimum sanctum*, *Oxalis corniculata*, *Piper nigrum*, and *Syzygium aromaticum* belong to this category.

Clinacanthus Nutans

It is well-known for its various therapeutic applications. *Clinacanthus nutans* or in Part grass snake is the common name), is a small shrub that belongs to the family *Acanthaceae* and is to be found in South-east Asia. Ethyl acetate fraction of the leaves of this plant are effective against *Bacillus cereus*, *Escherichia coli*, *Salmonella* and *Candida albicans*, which is the use of the minimum inhibitory concentration and the minimum antibacterial or antifungal studies.

Turmeric

This is the dried rhizomes of *Curcuma longa linn*, belonging to the family *Zingiberaceae*. It is widely used as a spice, food preservative and coloring agent in China, India, and Southeast Asia. Several sesquiterpenes, and curcuminoids have been isolated from the turmeric rhizome. They can be used in an anti-inflammatory, wound healing, antitumor, and anti-bacterial activity. Skin problems such as acne, alopecia, atopic dermatitis, aging of the face, itching, and psoriasis. The antioxidants in turmeric protect the skin against damage caused by free radicals, and quick recovery from all types of wounds, due to their antibacterial properties [30].

Research Needs

Further research into the efficacy, safety, optimal uses, and standardization of herbal remedies is clearly needed. Inhibiting factors in the United States include the nonpatentability of herbal materials in a system in which the typical costs of double blind

testing for food and drug administration (FAD) approval of drugs range in the millions of dollars, requiring patentability for private enterprise to attain a profit. Since herbal remedies currently

remain in the category of dietary supplements, a different mechanism of funding for research is needed (Table 1).

Table 1: Herbal drugs used in skin disorders.

Common Name	Botanical Name	Family	Part Used
Onion	<i>Allium cepa</i>	Liliaceae	Bulb
Neem	<i>Azadirachta indica</i>	Meliaceae	Leaf
Beetroot	<i>Beta vulgaris</i>	Brassicaceae	Root
Red cabbage	<i>Brassica oleracea</i>	Brassicaceae	Fruit
Marigold	<i>Calendula officinalis</i>	Asteraceae	Flowers
Green tea	<i>Camellia sinensis</i>	Theaceae	Leaves
Charas, Ganja	<i>Cannabis sativus</i>	Cannabinaceae	Leaves
Saffron	<i>Crocus sativus</i>	Iridaceae	Entire plant
Turmeric	<i>Curcuma longa</i>	Zingiberaceae	Rhizome
Carrot	<i>Daucus carota</i>	Apiaceae	Root
Lavender	<i>Lavendula officinalis</i>	Labiatae	Leaf

Conclusion

Herbs have great potential in treating various types of skin diseases. More than 80% of people in India rely on traditional health care and use a variety of plant products to treat skin-related problems. Compared to conventional allopathic medicine, it is relatively inexpensive and can be of great benefit. Herbs are a rich source of active ingredients and can be safe and cost effective for the treatment of skin diseases from rash to terrible skin cancer. More than 50% of the plants that are useful for treating skin diseases appear to be restricted to forests only, so activities such as deforestation, habitat destruction, urban migration, etc., can be extremely dangerous for these species. The conservation of these plants with the help of local participation and extensive research in this regard to increase the potential for herbal remedies in the treatment of skin diseases is an hour's need. Many herbal remedies have been used for centuries, showing good anecdotal effects. A few randomized, controlled trials have also shown significant results in the use of herbal remedies for treating skin disorders. Some countries, such as Germany, now require intensified herbal remedies and specific recommendations regarding the use and effectiveness of herbal remedies. It is important to know what other common remedies available and what side effects or possible interactions are allow for effective counseling for patients.

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References

- Sharma RK, Charak Samhita (1988) (Bhagwandas Chowkambha Sanskrit series office, Varanasi, India, p. 51-56.
- (2003) The Ayurvedic Formulary of India, Part-I, (Govt. of India, Ministry of Health and Family Planning, Department of Health, 2003) 103-119.
- (1987) Pharmacopoeial Standards for Ayurvedic Formulations (Central Council for Research in Ayurvedic and Sidda, Ministry of Health and Family Welfare, New Delhi, India, pp. 112-113.
- Kuno N, Matsumoto M (2004) Skin Beautifying agent, Antiaging agent for skin, Whitening Agent and External Agent for the skin. US Patent 6682763.
- Arquette DJG (2002) Dry Emollient Composition Composing monounsaturated jojoba esters. US Patent 6432428.
- <http://www.internationalbusinessstrategies.com>
- <http://www.sanjivaniherbals.com>
- Trueb RM (2001) The Value of Hair Cosmetics and Pharmaceuticals. *Dermatology* 202: 275-282.
- Martin R (2004) Use of atleast one extract of the genus chrysanthemum for assisting skin and/or hair pigmentation. US Patent 6726940.
- Dureja H, Kaushik D, Gupta M, Kumar V, Lather V (2005) Cosmeceuticals: An emerging concept. *Indian J Pharmacol* 37(3): 155-159.
- Teneralli MJ (2004) Traditional Skin Care Lines: Improving looks with dietary supplements. *Neutraceuticals World*. 7: 74-80.
- Kurata Y (1994) New Raw materials and technologies in cosmetics: Properties and applications of plant extract complexes. *Fragr J* 22: 49-53.
- Klingman AM (1996) Hydrating injury to human skin. In: Vander PGM, Maibach HI (Eds.), *The irritant contact dermatitis syndrome*. CRC press Inc, Boca Raton, USA, pp. 187-194.
- Klingman LH, Klingman AM (1992) Petrolatum and other hydrophobic emmoilents reduce UV-An induced damage. *J Dermatol Treatment* 3: 3-4.
- Etienneand JJ, Pham JL (2000) New and unexpected cosmetic properties of perfumes. *Int J Cosmetic Sci* 22: 317-328.
- Lee MY, Park KS, Hayashi C (2002) Effect of repeated short term skin contact with proteolytic enzymes. *Contact Dermatitis* 46(2): 75-80.

17. Smith WP (1998) Barrier disruption treatments for structurally deteriorated skin. US Patent 5720963.
18. Briviba K, Sies H (1994) Nonenzymatic antioxidant defense system. In: B. Frei. Eds Natural Antioxidants in Human Health and Disease. Academic Press, New York, USA, p. 9-11.
19. Sies H (1985) Introductory remark. In: Sies H (Eds.) Oxidative Stress. FL Academic Press, Orlando, USA, p. 1-7.
20. Sies H (1986) Biochemie des oxidativen streb. Angrew Chemie 98: 1061-1075.
21. Morilli JG, Norris DA (1993) Influence of inflammatory mediators and cytokines on human melanocyte function. J Invest Dermatol 100(2 Suppl): 191S- 195S.
22. Lo WB, Black HS (1973) Inhibition of carcinogen formation in skin irradiated with ultraviolet light. Nature 246: 489-491.
23. Dunham WB, Zuckerkandl E, Reynolds R, Willoughby R, Marcuson R, et al. (1982) Effects of intake of L- ascorbic acid on the incidence of dermal neoplasms induced in mice ultraviolet light. Proc Natl Acad Sci 79(23): 7532-7536.
24. Bissett DL, Chatterjee R, Hannon DP (1991) Chronic Ultraviolet radiation induced increase in skin iron and the photoprotective effects of topically applied iron chelators. Photochem Photoiol 54(2): 215-223.
25. Katiyar SK, Korman NJ, Mukhtar H, Agrawal R (1997) Protective Effects of Silymarin against photocarcinogenesis in mouse model. J Natl Cancer Inst 89(8): 556-559.
26. Wang ZY, Agrawal R, Bickers D, Mukhtar H (1991) Protection against Ultraviolet- B radiation- induced hairless mice by green tea polyphenols. Carcinogenesi 12(8): 1527-1530.
27. Black HS, Lowe NJ, Hensby CN (1989) Role of reactive oxygen species in inflammatory process. Pharmacology and the skin 2: 1-20.
28. Englard S, Seifter S (1986) The Biochemical Function of Ascorbic Acid. Annu Rev Nutr 6: 365-406.
29. Shindo Y, Witt E, Han D, Epstein W, Packer L (1994) Enzymic and nonenzymic antioxidants in epidermis and dermis of human skin. J Invest Dermatol 102: 122-124.
30. Sies H, Stahl W, Sundquist AR (1992) Antioxidant functions of vitamins. Ann NY Acad Sci 669: 7-20.



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