

Potential of Indigenous Plants for Skin Healing and Care

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Abstract

The outer protective layer of body is skin which not only guards it from external fluctuations and effects but also performs its thermoregulation. Its functioning may get affected due to several factors like dermal wounds, injuries, aging and many other disorders. These dermal ailments can be cured with the help of indigenous flora to get economical pharamcognosal benefits with no side effects which is a serious concern of synthetic drugs now days. Furthermore, research efforts are necessary for their proper dose optimization and administration to achieve low cost and side effects free pharamcognosal skin cure and care gains.

Keywords: Skin; dermal wounds; injuries; indigenous flora; skin cure.

1. Introduction

Skin is such a connective tissue which extends throughout the body surface and protective in nature because serves as barrier between the external environment and inner tissues and also contributes in thermoregulation [1]. Due to exposure to exterior milieu, skin often gets wounded or damaged due to several factors so in this regard, the wound medicinal society states that wounds are injuries which results in disturbance not only in skin anatomy but also in its physiological aspects. Even in such injured condition, dermal layer maintains the continuity of epithelial functioning of underlying connective tissues [2].

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Since ancient to current era, it is a common practice of physicians and researchers to focus on injured skin healing, regeneration and recovery along with finding the ways for its care. In this regard, all available resources like soil, mud, plants etc. are under consideration so far, whereas, on other hand, hormones and diverse synthetic compounds are also in use for dermal cure and care [3]. Centuries ago in Egyptian time period, skin injuries and burns were treated with gum leaves and honey whereas tea sheet is a traditional dermal issues remedy in Chinese pharmaceutical his--tory [4]. It's a common observation since long time that sour milk and a few fruits organic acids called alpha hydroxy acids, improve the quality and texture of keratinocyte layer of the skin and enhance growth of dermal cells [5]. In this account, curative plants are significantly involved in healing of different skin disorders since long time at global level as they usually don't cause any side effect. There is vast range of flora which is currently under investigation for their dermal pharamcognosal pursuits; some of them are cosmopolitan whereas others are endemic to some specific region. In short, they can serve as low cost or no cost ideal alternative for expensive and harmful side effects inducing synthetic drugs and xenobiotics. This remedial flora contains different free radicals having antioxidants which are required to protect skin [6]. On the other hand, various perfumed cosmetic products have a significant ratio of unsafe and adverse components which may cause diverse dermal disorders [7, 107]. In this review, authors tried to review and focus that pharamcognosal properties having Pakistani flora [106] which is either serving as skin healer or as accelerator for its care since long time, it also contains experimental evidences of those indigenous plants which may be utilized by researchers in future to resolve broad spectrum dermal issues.

2. Indigenous Plants for dermal cure and care

2.1. *Aloe barbadensis*

Common name: Aloe vera

Family: Liliaceae

This plant is used to maintain skin flexibility and also cures wound and burns [8]. Aloe vera gel is an ancient remedy for severe burns, excoriation, ulcers and skin irritations [9-12]. According to reported data, it contains vitamin E and C and amino acids so not only accelerates skin regeneration but also guards skin [13-15]. In addition to this, it serves as anti-aging agent [16, 17].

2.2. *Ammi visnaga*

Common name: Toothpick plant

Family: Apiaceae

Oral intake of this herb's powdered fruit was found effective in several clinical trials for cure of various symptoms of leukoderms [103]. Similarly, its topical dermal application also heals inflammation [87].

2.3. *Angelica sinensis*

Common name: Dang Gui

Family: Apiaceae

This herb is very common in Asian region and used as traditional medicine for external wounds healing [18]. The extract of *A. sinensis* roots of has been reported as potent wound healer [19, 20].

2.3. *Astragalus membranaceus*

Common name: Loco weed

Family: Fabaceae

It is one of the most popular healing agents in Asian zone since ancient times [21]. It is implied as natural product for anti-scar and wound healing purpose. It is also used to improve the strength of skin tensile strength [22]. It boosts blood circulation in skin [23].

2.4. *Azadirachta indica*

Common name: Neem

Family: Meliaceae

Several parts of this aromatic plant promote skin ulcers and wounds regeneration as it has provoking ability of revascularization [24-27]. Its significant constituents such as nimbidin, nimbin and nimbidol exhibit anti-inflammatory and antimicrobial actions and presence of considerable of amino acids, vitamins and other components accelerates wound remedial process [28, 104, 105]. Its ideal composition plays vital role to prevent onset of malignancy [29].

2.5. *Berberis lycium*

Common name: Indian barberry

Family: Berberidaceae

B. lycium is cosmopolitan in origin but more commonly found in sub-tropical areas of Kashmir to Uttaranchal and in upper northern-western Himalayas [30]. Morphologically, it is a large, spiny, evergreen deciduous shrub. Pharmaceutically, its roots are known as Rasaut [31] which are used in Ayurvedic medicines and in Unani system of medicine, for the cure of leprosy. It is also a renowned remedy for dermal wounds [32].

2.6. *Boerhavia diffusa*

Common name: spreading hogweed

Family: Nyctaginaceae

Whole plant body of this herb is significantly used for pharmacognosial pursuits to treat dermal wounds and other ailments. *B. diffusa* accelerates the process of skin wound closure [108]. Its chemical composition is not only suitable for anti-aging but also strengthens and guards body against diseases [109].

2.7. *Camellia sinensis*

Common name: Tea

Family: Theaceae

Recent data highlights that the extract of *C. sinensis* recovers acute radiation-induced skin reaction and it also effective for dermal care and to avoid skin side effects during postoperative whole breast radiotherapy [110]. The extract of *C. sinensis* callus is ideal for skin wound and lesions healing, dermal regeneration along with its cure and protection either for UV light or aging process because it maintains the content of collagen in skin [111].

2.8. *Cassia angustifolia*

Common name: Indian senna

Family: Caesalpiniaceae

It is developed entirely over the earth and is used as an accepted folk medicine in the healing of unique skin diseases [33]. Senna treatment enhances the quantity of Langerhans cells in the skin which improves its immunological role [34].

2.9. *Centella asiatica*

Common name: Centella

Family: Apiaceae

It is suitable and recognized aromatic plant used to heal hypertrophic wounds, burns and added as anti-inflammatory agent in numerous skin curing products [35, 36].

2.10. *Citrullus colocynthis*

Common name: Bitter apple

Family: Curcubitaceae

Topical application of bitter apple is highly effective for recovery of dermal wounds due to its antioxidant activity during experimental investigation of whole plant body's methanol extract analysis because it accelerates wounded site contraction and also stimulates rise in hydroxyproline content of granulation tissue [112].

2.11. *Coriandrum sativum*

Common Name: Coriander

Family: Umbelliferae

It is the leading crop which serves as therapeutic agent. It is extensively grown globally for the production of vital oil. Usually its productivity rate is greater in India, Pakistan, Bangladesh, Russia, Central Europe, Morocco, and China. By using different bioassay techniques, the extracts of leaf and seed of coriander were tested and conclusion was that coriander is an antioxidant agent. Major skin disorders such as eczema, dehydration and fungal toxicities are being cured by coriander which acts as purifier, cleansing, antiseptic, anti-fungal and antioxidant agent. It has many benefits in treatment of ulcer, swelling, and spasm. It also exhibit anti-carcinogenic, anti-convulsant, anti-histaminic and hypnotic properties [37].

2.12. *Curcuma longa*

Common Name: Turmeric

Family: Zingiberaceae

It is found in Asian region and has a lot of pharmacognosol benefits to treat different diseases. Similarly, dermatologists employ it as wound healer. Topical application of its powder on wounds and dermal ulcers accelerates the healing and regeneration process. It possesses antioxidant, antiviral, antibacterial, anti-inflammatory and antiseptic properties. It is traditionally applied on bridal skin in the form of ubtan to enhance skin glow [38, 39].

2.13. *Curcumis sativum*

Common Name: Cucumber

Family: Cucurbitaceae

It is a medicinal herb recommended for dermal problems and its fruits and seeds are used in many makeup products as anti-wrinkle and anti-inflammatory agents which help to retain the flexibility of skin. It is also added in skin lotion which enhances and maintains skin tone by preventing tyrosinase activity. Its extract is potent source for better blood circulation of skin. That's why; it is used commonly in cosmetics [40, 41].

2.14. *Dalbergia sissoo*

Common name: Rosewood

Family: Papilionaceae

D. sissoo has been reported as an ancient remedial plant. It is a folk remedy for skin ailments [42].

2.15. *Daucus carota*

Common name: Carrot

Family: Apiaceae

It has been reported that alcoholic extract of *D. carota* possesses antimicrobial mode of action which helps in wound recovery and regeneration [43].

2.16. *Glycine max*

Common Name: Soyabean

Family: Fabaceae

It contains hyaluronic acid which is used in cosmetics and for dermal ailments' treatment. It also acts as an antiwrinkling agent [44].

2.17. *Hibiscus trionum*

Common name: Flower of an hour

Family: Malvaceae

This plant is used for wounds dressing and treatment and also reduces skin wrinkles [45]. This sage is a known old medicine of dermal irritation and painful skin diseases [46].

2.18. *Hypericum perforatum*

Common name: St John's wort

Family: Hypericaceae

Red extract from this plant is used for the formation of cosmetic products which is used for oily skin and for other skin problems like skin lesions, herpes [47,48]. It's is also used for wound healing [49]. It is also used to retard skin ageing and cause freshness and clarity of skin [50]. It is also used to clean oil from skin [51].

2.19. *Lawsonia inermis*

Common Name: Henna

Family: Lythraceae

Its extracts of stems and leaves show anti-inflammatory activity. Tinea versicolor is a fungal infection which is treated by henna. Noticeably, it is thought that it acts as wound healer [52, 53].

2.20. *Mentha arvensis*

Common name: Wild mint

Family: Lamiaceae

Since old times, this herb is indulged for recovery of skin wounds, moreover, its leaves extract is a remedy of boils [54-56], skin allergies and for treatment of dermal tumors and to soothe and restore the texture of rough and dry skin [57, 58].

2.21. *Nardostachys jatamansi*

Common name: Spikenard

Family: Caprifoliaceae

This herb has been used so far as component of polyherbal composition to cure inflamed skin and it is found as stimulant for immune responses and dermal tissue regeneration [113].

2.22. *Nigella sativa*

Common name: Black seed

Family: Ranunculaceae

Its oil is potent to heal diabetic ulcers, moreover, when implicated topically as mixture with honey, accelerates the dermal wounds recovery and regeneration process [114, 115].

2.23. *Ocimum basilicum*

Common name: Basil

Family: Lamiaceae

The foliage of this sage are acknowledged to obtain lots of remedial and other curative properties together with wounds medicinal and skin irritation to hang on to missing from merciless spirits [59].

2.24. *Oxalis corniculata*

Common name: Sleeping beauty

Family: Oxalidaceae

Mixture of its extract and butter is applied in insect bites, burns, pimples, for dermal eruption and antibacterial activity [60, 61]. The leaves are used to remove warts, corns and other excrescences on the skin and other related ailments [62, 63]. Additionally, it exhibits effective the wound remedial activity [64].

2.25. *Phoenix dactylifera*

Common name: Date palm

Family: Arecaceae

It is efficient inflammatory, antimicrobial agent and also has mineral components which play key role in dermal wound cure and anti-aging process [64-67]. Modern analysis highlights its role in skin cancer treatment [68]. The leaves, pollen and dates of this herb are frequently reported for skin injuries, severe acne, bites of scorpions, beauty musk and for several other diseases' remedy [69].

2.26. *Piper betel*

Common name: Betel

Family: Piperaceae

The leaves of this plant are potent healer of scabies, dermal infections, itching, irritation, wounds and burns [70-72].

2.27. *Prunus armeniaca*

Common name: Apricot

Family: Rosaceae

It shows anti-inflammatory and antimicrobial activities and its leaves are used to treat the microbial invasion of skin wounds [73-75]. Bark is used as soothing agent to recover damaged skin. Kernel paste is used to protect the skin from UV radiations [76].

2.28. *Punica granatum*

Common name: Pomegranate

Family: Lythraceae

The use of various extracts based on apricot suggests that is a potent agent to heal skin wounds, inflammation, microbial infections and burns, when applied topically. As it enhances the rate of epithelialization, granulation, wounded area size reduction and produces other supportive immunological and biological effects for skin regeneration [115-123].

2.29. *Saussurea lappa*

Common name: Costus

Family: Compositae

This aromatic plant is implicated for treatment of burning sensation, itching, rashes and other skin ailments [77, 78]. It is topically applied to damage and discolored skin, black spots and itching expected to occur in ringworm infection [79].

2.30. *Solanum nigrum*

Common name: Black nightshade

Family: Solanaceae

According to recent research work, the ethanolic extract of this herb is found quite effective antimicrobial and wound healer, moreover, along with skin regeneration, it promotes dermal angiogenesis, re-innervation and regrowth of hair follicles at wounded site [104, 105].

2.31. *Symphytum officinale*

Common name: Comfrey

Family: Boraginaceae

The extract of this floral species promotes the wound healing and skin regeneration due to remarkable proliferation of skin fibroblast; moreover, it reduces the inflammation [80, 81, 82, 83].

2.31. *Tamarindus indica*

Common name: Tamarind tree

Family: Fabaceae

It is an ancient medicinally important ever green tree. It is mostly found in India, Pakistan, Bangladesh, Nigeria

and other tropical areas of Asia [84]. A potent anti-parasitic in nature and its bark, flowers and leaves are employed for various pharmacognosal pursuits about dermal wound healing [85].

2.32. *Terminalia arjuna*

Common name: Arjun tree , Family: Combretaceae

It is traditional medicine of India. This herb has the characteristics of wound healing and anti-aging [86].

2.33. *Trifolium pretense*

Common name: Red clover, Family: Fabaceae

It gives radiance and strength to skin and decreases its aging by estrogen standard level maintenance [88]. It rapidly heals the wounds and burns and reduces the occurrence chances of skin cancer [89, 90]. Its gel is used to treat many skin disorders like acne, boils and eruptions [91, 92].

2.34. *Trigonella foenumgraecum*

Common name: Fenugreek, Family: Papilionaceae

This herb is used for diverse health situations and significantly for wound healing, skin irritation, itching and dermal cancer [93, 94].

2.35. *Triticum aestivum*

Common name: Wheat, Family: Poaceae

Buds and flowers of wheat contain vitamin A-E significantly but overall it is antioxidant, emollient and moisturizer in nature. As it have precursors of vitamin A (carotene), that's why; also serves an anti-aging agent and increases amount of collagen thus serves as an ideal skin wound healing and soothing agent [95, 96, 97,98].

2.36. *Vitis vinifera*

Common name: Grape Seed, Family: Vitaceae

Biochemically, grape seed contains flavonoids which exhibit antioxidant properties. Proanthocyanidins are a subtype of flavonoids and their anti-oxidant properties for wound curing have been proved [99].

2.37. *Zingiber officinale*

Common name: Ginger , Family: Zingiberaceae

It is used for the protection of human skin from environmental damaging effects like UV radiations. As it has

naturally occurring oxidants that reduce chances of skin infections and help in growth retardation of skin cancerous cells [100,101]. It is also an important constituent in many skin products [102].

3. Conclusion

Indigenous herbal flora of Pakistan is highly potent for skin care and cure and in near future research efforts are required their proper dose optimization and administration to get economical and side effects free pharmacognosial and dermatological healing and care benefits.

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