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REVIEW ARTICLE

IMPLICATION OF FLORA FOR SKIN WOUND HEALING AND REGENERATION FROM PAKISTAN

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ABSTRACT

Skin which is a collection of layers serves as barrier against external and internal stimuli. In case of any fluctuation, its normal functioning suffers and causes resistance in its regulating and protective role. In current review, skin wounds, their healing and after wards dermal regeneration process was focused. To speed up the process of wound healing them edicinal flora of Pakistan contributes a lot and assists as healing boosters along with recovery of other diverse skin ailments. That is why, future investigations should be made to gain benefit from this local herbal treasure to serve humanity at low cost.

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INTRODUCTION

The outer protective armor and largest organ of body, the skin comprises of two layers i.e. the outer: epidermis and the inner: dermis. Furthermore, epidermis made up of a stratified keratinized epithelium that is interposed with hair follicles and glands so serves as barrier against the external environment whereas the dermis chiefly contains connective tissue but due to differences of collagen fibers thickness; it is further subdivided into two layers i.e. the upper papillary dermis and the lower reticular dermis which define dermal mechanical properties(Martin, 1997; Singer, 1999; Watt, 2011). The mechanical properties of the skin are also reestablished with the help of cells, involved in proliferation, differentiation, immigration and cell death during wound repair and dermal regeneration.

Stages of cutaneous wound repair: There are basically three steps of cutaneous wound repair i.e. inflammatory phase, proliferative phases and remodeling phase(Martin, 1997; Singer, 1999; Gurtner, 2008)and this process of wound healing can be accelerated with the help of various cutaneous healers which may be either of floral origin(Rahmatullah, 2011) orsyntheticones(Heilmann*et al*., 2013). Following is the series of changes which occurs during wound repair:

Hemostasisand inflammation: In this first phase, hemostasis occurs due to vasoconstriction and formation of fibrin clot, whereas inflammation is stimulated by the release of cytokines and growth factors from platelets and immune cells, and from the disrupted matrix, invasion of inflammatory cells (neutrophils, monocytes, macrophages)(Singer, 1999; Schultz*et al*., 2011; Guo, 2010; Delavary, 2011).

Proliferation: at this stage, the macrophages and fibroblasts of dermis, release of growth factors so fibroblast migration takes place and proliferation is triggered by the synthesis of matrix proteins (fibronectin and collagen), along with it, angiogenesis, epidermal keratinocyte migration and differentiation, regrowth of hair follicular stem cells occur(Singer, 1999; Gurtner*et al*., 2008; Langton*et al*., 2008; O'toole, 2001; Clark, 1990; Taylor*et al*., 2000;Snipper*et al*., 2010; Ffrench-Constant*et al*., 1989; Ito*et al*., 2005).

Remodeling: for it, the extra cellular matrix reorganization and remodeling takes place meanwhile myofibroblast formation, wound contraction and cellular apoptosis also occur(Gurtner, 2008; Guo, 2010; Hinz, 2007; Desmoulier*et al*., 1995).

Table 1. Major retarding factors for wound healing and skin regeneration

Factors	Types of factors	Effects
External	Smoking	Prolonged effect on inflammatory and reparatory cell functions leading to delayed healing and complications (Sørensen, 2012).
	Aging	Delayed wound healing (Gosain, 2004).
	Stress	Hinders bacterial clearance during wound healing, enhances infection chances, leading to delayed wound healing (Rojas *et al*., 2002).
Internal	Growth factors, cytokines and chemokines	Lack of growth factors, cytokines and chemokines make cutaneous wound healing impossible (Barrientos*et al*., 2008).
	Diabetes	Patients with diabetes mellitus suffer from delayed wound healing and infections (Kollur*et al*., 2012).

Table 2.Pakistani flora for skin regeneration and repair

Scientific Nameof Herb	Family	Used Parts	DermalBenefits
Adiantumvenustum	Adiantaceae	Rhizome	Rhizomepaste is usedto healcutsand wounds(Amjad*et al*., 2015)
Anaphalismargaritacea	Asteraceae	Entireplant body	Poultice made of whole plantis applied on burns, sores, ulcers, bruises and swellings(Amjad*et al*., 2015)
Androsacerotundifolia	Primulaceae	Leaves	Skin infections(Amjad*et al*., 2015)
Acacia nilotica	Mimosaceae	Young stems	Wound repair and healing(Ajaib, 2015; Rehman *et al*., 2017)
Aloe vera	Asphodelaceae	Leaves	Skin infection(Shah, 2013; Khan *et al*., 2016)
Azadirachtaindica	Meliaceae	leaves	Specially used for face washing, suffering from dermaldiseases(Ajaib, 2015)
Artemisia vulgaris	Asteraceae	Leaves/shoots	Skin disorders(Ullah, 2014)
Aervatomentosa	Amaranthaceae	Whole plant	Dermal swelling (Iqbal*et al*., 2014)
Asphodelustenuifolius	Liliaceae	seeds	Topical application for swellings and inflammation (Iqbal*et al*., 2014)
Aquilegia pubiflora	Rananculaceae	stem	Skin infection (Begum *et al*., 2014)
Arisaemaflavum	Araceae	Root and stem	root and stem paste for topical dermal application (Begum *et al*., 2014)
Artemisia fragrans	Asteraceae	Leaves	Skin diseases (Begum *et al*., 2014)
Aervajavanica	Amaranthaceae	Flower	Aqueous floral paste is used on wound for hemostasis (Shah, 2013)
Albizialebbeck	Mimosaceae	Seeds	Oil for skin ailments (Shah, 2013)
Asparagus racemosus	Asparagaceae	Root & stem	Antiseptic paste is applied for wound healing(Khan *et al*., 2013)
Ajugabracteosa	Aracaceae	Leaves	Skin infections (Ahmad *et al*., 2014)
Ageratum conyzoides	Asparagaceae	leaves	wounds and dermal problems(37)
Achyranthesaspera	Amaranthaceae	Whole Plant	Skin eruptions (Khan *et al*., 2016)
Anagallisarvensis	*Primulaceae*	Whole plant	Skin infection (Khan *et al*., 2016)
Argemonemexicana	*Papaveraceae*	Roots, leaves, seeds and juice	Skin diseases (Khan *et al*., 2016)
Artemisia biennis	Apiaceae	Leaves	Skin infections (Ahmad *et al*., 2014)
Aristolochiabracteolata	Aristolochiaceae	Leaves	Eczema and dermatitis(Qureshi, 2008)
Amberboaramosa	Asteraceae	Whole plant	Skin irritation (Qureshi, 2008)
Achyranthsaspera	Amaranthaceae	Root, stem and leaf	Boils and leprosy (Batool*et al*., 2017)
Amaranthusgraecizans	Amaranthaceae	Whole plant	Skin rashes and edema(Batool*et al*., 2017)
Allium cepa	Amaryllidaceae	Bulb	Skin injuries (Rehman*et al*., 2017)
Acacia nilotica	Fabaceae	Leaf, Fruit	Gonorrhea (Rehman*et al*., 2017)
Arachishypogaea	Fabaceae	Seed	Gonorrhea (Rehman*et al*., 2017)
Ajugaintegrifolia	Lamiaceae	Leaf	Pimples and Measles (Rehman*et al*., 2017)
Abelmoschusesculentus	Malvaceae	Fruit, Leaf	Dermatological diseases (Rehman*et al*., 2017)
Atriplexstocksii	Amaranthaceae	Whole plant	Boils and skin wounds(Rehman*et al*., 2017)
Avena sativa	Poaceae	Seed	Skin allergy (Rehman*et al*., 2017)
Ageratum conyzoides	Asteraceae	Whole plant	Cuts and wounds (Umair*et al*., 2017)
Brassica rapa	Brassicaceae	Whole plant	Skin edema (Umair*et al*., 2017)
Brassica napus	Brassicaceae	Seed, Leaf	Skin dryness (Rehman*et al*., 2017)
Brassica oleracea	Brassicaceae	Leaf	Eczema (Rehman*et al*., 2017)
Bombaxceiba	Malvaceae	Whole plant	Gonorrhea (Rehman*et al*., 2017)
Bergeniaciliata	Berberidaceae	Rhizome	Skin infections (Ahmad *et al*., 2014)
Blepharisciliaris	Acanthaceae	Seeds	Topical implication of powdered seeds on wounds and cuts for initial healing and serve as antiseptic (Shah, 2013)
Berberislycium	Berberidaceae	Root bark	Skin wounds (Amjad*et al*., 2015; Begum *et al*., 2014; Amjad, 2014)
Commelinabenghaliensis	Commelinaceae	Leaves and flowers	Sores and wounds (Amjad*et al*., 2015)
Cyperusdifformis	Cyperaceae	All plant body	Paste for topical application for skin infections (Amjad*et al*., 2015)
Calotropisprocera	Asclepiadacae	Whole plant	Skin diseases (Ajaib*et al*., 2015; Rehman *et al*., 2017; Shah *et al*., 2013; Khan *et al*., 2016; Ahmad *et al*., 2014; Umair *et al*., 2017; Qureshi, 2012)
Carthamusoxyacanths	Asteraceae	Whole plant	Skin diseases (Iqbal*et al*., 2014)
Cleome brachycarpa	Capparidaceae	seeds	Dressing applied for inflammation (Iqbal*et al*., 2014)
Citrulluscolocynthis	Cucurbitaceae	seeds	Oil serves as skin emollient (Rehman*et al*., 2017; Iqbal*et al*., 2014)
Convolvulus arvensis	Convolvulaceae	Leaves	Skin burning sensation (Rehman*et al*., 2017; Iqbal*et al*., 2014)

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Cynodondactylon	Poaceae	Whole plant	Infusion of roots and leaves is used to treat wounds (Shah, 2013)
Cedrusdeodara	Pinaceae	Wood	Oil are extracted from wood through burning and used to cure skin disorders (Khan *et al*., 2013)
Cappariscartilaginea	Capparidaceae	Whole plant	Latex is used to treat all kinds of skin ailments (Shah, 2013)
Capsellabursapastoris	Brassicaceae	Leaves	Dermal wounds, bruises and boils (Shah, 2013)
Chenopodium album	Amaranthaceae	Leaves	Paste of leaves applied for wounds of cattle (Shah, 2016)
Chrozophoraoblongifolia	Euphorbiaceae	Fruit	Effective dermal wound healing properties (Shah, 2013)
Cassia fistula	Fabaceae	Leaves, bark, fruit and roots	Skin allergy (Rehman*et al*., 2017; Khan, 2016)
Capparis decidua	Capparaceae	Tender shoots	Paste applied for blisters and boils (Qureshi, 2012)
Corchorustridens	Tiliaceae	Leaves	Crushed leaves are applied on cuts, wounds and burns to heal (Qureshi, 2012)
Cympbopogonjwarancusa	Poaceae	Roots, leaves	The decoction of roots/leaves is given for skin eruption(Qureshi, 2012)
Cyperusrotundus	Cyperaceae	Roots	Acne(Qureshi, 2008)
Capsellabursapastoris	Brassicaceae	Seed, Leaf	Wounds healing(Rehman *et al*., 2017)
Catharanthusroseus	Apocynaceae	Leaf	Skin problems (Rehman *et al*., 2017)
Commelinabenghalensis	Commelinaceae	Whole plant	Pimples and Bedsores(Rehman *et al*., 2017)
Cucumissativus	Cucurbitaceae	Fruit, Leaf and Root	Skin problems (Rehman *et al*., 2017)
Citrus aurantium	Rutaceae	Fruit	Skin problems (Rehman *et al*., 2017)
Citrus limon	Rutaceae	Fruit	Skin problems(Rehman *et al*., 2017)
Cestrum nocturnum	Solanaceae	Leaf and Flower	Skin diseases (Rehman *et al*., 2017)
Cucumismelo	Cucurbitaceae	Leaf, flower and shoot	Skin infections ((Batool *et al*., 2017)
Cenchruspennisetiformis	Poaceae	Whole plant	Skin irritation and eczema (Umair*et al*., 2017)
Cirsiumarvense	Asteraceae	Whole plant	Wounds (Umair*et al*., 2017)
D. viscosa	Sapindaceae	Leaves	To heal wounds and cracked skin (Amjad, 2014)
Dichanthiumannulatum	Poaceae	Stem, leaves	Leaves' ash is applied on injured portion to heal wound (Shah *et al*., 2016)
Daucuscarota	Apiaceae	Root	Skin problems(Rehman *et al*., 2017)
Dalbergiasissoo	Fabaceae	Bark and Leaf	Skin allergy and Boils cure (Rehman *et al*., 2017)
Erucavesicaria	Brassicaceae	Leaf and Seed	Abscesses, wound healing and other skin diseases (Rehman *et al*., 2017)
Eriobotrya japonica	Rosaceae	Fruit and Leaf	Skin cancer (Rehman *et al*., 2017)
Euphorbia neriifolia	Euphorbiaceae	Root	Boils and skin wounds healings (Rehman *et al*., 2017)
Euphorbia helioscopia	Euphorbiaceae	Whole plant	The plant is squeezed to get white latex which is applied on wounds as an antiseptic (Rehman *et al*., 2017; Iqbal *et al*., 2014)
Euphorbia Prostrata	Euphorbiaceae	Whole plant	Latex of the plant is applied on wounds as an antiseptic (Iqbal *et al*., 2014)
Euphorbia wallichii	Euphorbiaceae	Whole plant	Eczema (Begum *et al*., 2014)
Equisetum arvense	Equisetaceae	Arial parts	Poultice of mashed plant for wound recovery (Shah, 2013)
Emexspinosus	Polygonaceae	Aerial plant	Wound healing dressing (Shah, 2013)
Euphorbia hirta	Euphorbiaceae	Leaves and its extract	Burn and wounds healing (Khan *et al*., 2016)
Elaeagnusangustifolia	Rosaceae	Whole plant	Skin infections (Ahmad *et al*., 2014)
Fragarianubicola	Elaeagnaceae	Leaves and roots	Skin infections (Ahmad *et al*., 2014)
Fumariaparviflora	Papaveraceae	Whole plant	Paste is used to cure skin rashes (Shah, 2013)
Fagoniaindica	Zygophyllaceae	Whole plant	Skin eruption (38,42)
Fagoniabruguieri	Zygophyllaceae	Whole plant	Skin eruption (Qureshi, 2008)
Fumariaindica	Fumariaceae	Whole plant	Skin diseases (Qureshi, 2008)
Ficusbenghalensis	Moraceae	Leaf and Root	Abscesses and Gonorrhoea(Rehman *et al*., 2017)
Ficusreligiosa	Moraceae	Leaf and Shoot	Skin diseases (Rehman *et al*., 2017)
Ficusracemose	Moraceae	Whole plant	Boils (Umair*et al*., 2017)
Gardenia jasminoides	Rubiaceae	Flower and Fruit	Wound healing (Rehman *et al*., 2017)
Galiumelegan	Rubiaceae	Leaves	Topical appliance for wounds as an antiseptic agent (Amjad *et al*., 2015)
Gerbera gossypina	Asteraceae	Root	Paste application for bleeding control the from newly cut wounds (Amjad *et al*., 2015)
Heliotropiumeuropaeum	Boraginaceae	Whole plant	Leprosic skin (Shah, 2013; Qureshi, 2008)
Heliotropiumstrigosum	Boraginaceae	Leaves	Skin wounds(Qureshi, 2008)
Hibiscus rosasinensis	Malvaceae	Flower and Root	Gonorrhoea(Rehman *et al*., 2017)
Helianthus annuus	Asteraceae	Flower and Seed	Itching (Rehman *et al*., 2017)
Impatiens edgeworthii	Balsaminaceae	All plant body	Dermal burns (Amjad *et al*., 2015)
Iphionagrantioides	Asteraceae	Whole plant	Skin wounds (Qureshi, 2012)
Loranthuspulverulentus	Loranthaceae	Leaves	Wound curing (Amjad, 2015; Amjad, 2014)
Launeanodicaulis	Asteraceae	Whole plant	skin disorder (Iqbal *et al*., 2014)
Lyciumedgeworthii	Solanaceae	Whole plant	Ringworm and other skin ailments (Shah, 2016)
Malvaparviflora	Malvaceae	Whole plant	Swellings, wounds and inflammations (Iqbal *et al*., 2014)
Malvacoromandelianum	Malvaceae	Whole plant	Applied to inflamed sour and wounds for cooling effect (37)
Malvastrumcoromandelianum	Malvaceae	Leaves	Recovers wounds (Shah, 2013)
Micromeriabiflora	Lamiaceae	Root	Treatment of wounds (Amjad *et al*., 2015)
M. Africana	Myrsinaceae	Leaves	Skin diseases (Amjad, 2014)
Menthalongifolia	Lamiaceae	Leaves and stem	Wound healing (Khan *et al*., 2016)
Mimosa pudica	Mimosoideae	Leaves, Flowers	Dermal injuries and wounds (Khan *et al*., 2016)
Menthaarvensis	Lamiaceae	Leaf	Boils (Rehman *et al*., 2017)
Malussylvestris	Rosaceae	Fruit	Skin problems (Rehman *et al*., 2017)
Meliaazedarach	Meliaceae	Whole plant	Allergy and skin wound healing(Umair*et al*., 2017)
Malvastrumtricuspidatum	Malvaceae	Whole plant	Sores and wounds, eczema(Umair*et al*., 2017)
Neriumindicum	Apocyanaceae	Root	Oil from root bark implemented in skin infections and leprosy (Shah, 2016)
Oleaferruginea	Oleacea	Leaves	Skin diseases (Amjad, 2015; Amjad, 2014)
Otostegialimbata	Lamiaceae	Leaves	Skin diseases (Amjad, 2015; Ahmad*et al*., 2014; Amjad, 2013)
Oxalis corniculata	Oxalidaceae	Whole plant	Anti-bleeding in wound (Ullah *et al*., 2014; Ahmad *et al*., 2014)

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Oxalis debilis	Oxalidaceae	Leaves	Skin cuts and wounds (Begum *et al*., 2014)
Oleaferruginea	Lamiaceae	Leaves	Skin infections (Ahmad *et al*., 2014)
Origanumvulgare	Oleaceae	Whole plant	Skin infections (Ahmad *et al*., 2014)
Ocimumbasilicum	*Lamiaceae*	Leaves, flowers,seeds, root	Skin infection (Khan *et al*., 2016;Shah *et al*., 2016)
Oxalis corniculata	Lamiaceae	Whole plant	Wound healing (Khan *et al*., 2016)
Oxalis corniculata	Geraniaceae	Whole plant	Skin wounds (Umair *et al*., 2017)
Prosopis cineraria	Fabaceae	Whole plant	Boils and blisters (Umair *et al*., 2017)
Punicagranatum	Lythraceae	Leaf and Fruit	Wounds and skin diseases treatment (Rehman *et al*., 2017)
Piper nigrum	Piperaceae	Seed	Pimples (Rehman *et al*., 2017)
Partheniumhysterophorus	Asteraceae	Whole plant	Rashes of skin, eczema and inflammation (Ullah, 2014)
Periplocaaphylla	Asclepiadaceae	Whole plant	Latex for skin ailments; significantly for healing of wounds (Shah *et al*., 2013)
Physorrhynchuschamaerapistrum	Brassicaceae	Leaves	To treat wounds with pus (Shah *et al*., 2013)
Plantagoovata	Plantaginaceae	Seeds	Dressing for treatment of boils and ulcer (Shah *et al*., 2013)
Portulacaoleracea	Portulacaeae	Leaves	poultice used on skin to remove pus (Shah *et al*., 2013)
Pinuswallichiana	Pinaceae	Resin and wood	Recovers cracked heels (Khan *et al*., 2013)
Plantagohimalaica	Plantaginaceae	Leaves	Paste for skin problems especially soured feet (Khan *et al*., 2013)
Plantago major	Plantaginaceae	Leaves	Cure wounds (Khan *et al*., 2013)
Pongamiaglabra	Fabaceae	Bark, leaves, flowers, seedsand oil	wounds healing (Khan *et al*., 2016)
Plantagolanceolata	Anacardiaceae	Leaves and fruits	Skin sores, burns, wounds (Ahmad *et al*., 2014)
Rhuscotinus	Acanthaceae	Leaves and flowers	Paste of leaves and flowers is used in skin related illnesses as blood purifier (Amjad *et al*., 2015; Amjad, 2014)
Rumexnepalensis	Polygonaceae	Leaves	The extract exhibits antiseptic properties against injuries and skin problems (Amjad *et al*., 2015; Begum*et al*., 2014; Ahmed*et al*., 2013)
Ranunculusmuricatus	Ranunculaceae	Whole plant	The paste is used for cure of eczema locally known as Chambal (Ullah, 2014)
Ricinuscommunis	Euphorbiaceae	Seeds	The oil is useful as dermal Lubricant and emollient (Iqbal *et al*., 2014)
Rumexvesicarius	Polygonaceae	Leaves	Wound treatment (Khan *et al*., 2015)
Rhazyastricta	Apocynaceae	Whole plant	Cure of chronic wounds (Shah *et al*., 2013)
Rheum austral	Polygonaceae	Rhizome	Wound healing remedy (Khan *et al*., 2013)
Rosa webbiana	Rosaceae	Bark	Wound therapeutics (Khan *et al*., 2013)
Rumexdentatus	Polygonaceae	Roots	Overcomes dryness and heals dermal scaling (Rojas *et al.,* 2002; 35. Schultz*et al.,* 2011; Sørensen, 2012;Umair *et al.,* 2017)
Rosa chinensis	Rosaceae	Flower and Seed	Wounds healing and skin diseases (Rehman *et al*., 2017)
Sonchuarvensis	Asteraceae	Stem, leaf and root	Skin inflammation (Rehman *et al*., 2017)
Solanumlycopersicum	Solanaceae	Fruit	Skin disorders(Rehman *et al*., 2017)
Solanummelongena	Solanaceae	Leaf and Fruit	Abscesses(Rehman *et al*., 2017)
Solanumnigrum	Solanaceae	Fruit and Leaf	Skin Inflammation and wounds (Rehman *et al*., 2017)
Solanumvirginianum	Solanaceae	Fruit, flower and leaf	Gonorrhoea (Rehman *et al*., 2017)
Sambucusweightiana	Sambucaceae	Whole plant	Inflammatory skin (Khan *et al*., 2013)
Saussureaalbescens	Asteraceae	Roots	skin diseases (Khan *et al*., 2013)
Saussuriaheteromala	Asteraceae	Seeds	Cure of scabies and pimples (Umair *et al.,* 2017)
Solanumsurratense	Solanaceae	Leaves	Dermal disorders (Ahmed *et al*., 2013)
Schweinfurthiaimbricata	Scrophulariaceae	Leaves	Dried powdered leaves are applied to wounds and ulcers to heal (Shah *et al*., 2013)
*Seteriaviridis*sh	Poaceae	All plant body	Aqueous solution is applied to treat bruises (Amjad, 2015)
Solanumsurattense	Solanaceae	Leaves and fruits	Aqueous extract for skin diseases (Amjad, 2015)
Stellaria media	Caryophyllaceae	Whole plant	Eczema and boils (Ullah, 2014)
Saccharumaurandinaceum	Gramineae	Whole plant	Extract produces cooling effect when applied against burning dermal sensation (Iqbal *et al*., 2014)
Sileneconoidea	Caryophyllaceae	Flower	Serves as skin emollient (Iqbal *et al*., 2014)
Sisymbriumirio	Brassicaceae	Seeds and branches	Oil is used as emollient (Rehman *et al*., 2017; Iqbal *et al*., 2014)
Sonchusasper	Asteraceae	Whole plant	To treat skin wounds and boils (Rehman *et al*., 2017; Khan *et al*., 2016; Shah *et al*., 2016)
Salix babylonica	Polygonaceae	Leaves	Dermal wounds (Ahmad *et al*., 2014)
Swertiachirata	Apiaceae	Leaves	Skin diseases (Begum *et al*., 2014)
Typhaangustifolia	Typhaceae	Flowers	Soothing and cooling effects producer on application for wounds and burns (Shah *et al*., 2013)
Tamarixaphylla	Tamaricaceae	Leaves	Ideal dressing to heal the wounds due to saddle sores and rope burns (Shah *et al*., 2013; Umair *et al*., 2017)
Taraxacumofficinale	Asteraceae	Roots and leaves	Skin problems (Khan *et al*., 2016)
Tephrosiaapollinea	Papilionaceae	Leaves	Used as poultice on wounds to reduce pain and for rapid heal (Shah *et al*., 2013)
Tageteserecta	Asteraceae	Flower	Skin problems(Rehman*et al*., 2017)
Trigonellafoenumgraecum	Fabaceae	Seed, Leaf	Skin infections (Rehman *et al*., 2017)
Trianthemaportulacastrum	Aizoaceae	Whole plant	Wound healing (Rehman *et al*., 2017)
Triticumaestivum	Poaceae	Whole plant	Wound healing (Umair *et al*., 2017)
Valerianajatamansi	Velerianaceae	Roots	Topical skin treatment (Begum *et al*., 2014)
Verbascumthapsus	Scrophulariaceae	Leaves and floral parts	Quick recovery of dermal cuts and injuries (Shah *et al*., 2013;Ahmad *et al*., 2014)
Vitexnegundo	Verbenaceae	Leaves	Skin diseases (Umair *et al.,* 2017)
Withaniacoagulans	Solanaceae	Fruit	Dermal disorders cure (Shah *et al*., 2013)
Withaniasomnifera	Solanaceae	Leaves	Poultice on burns has soothing effect (29,30)
Xanthium strumarium	Asteraceae	Whole plant	Skin burn (Umair *et al*., 2017)
Zanthoxylumarmatum	Solanaceae	Bark and fruit	Skin infections (Ahmad *et al*., 2014)
Zizyphus jujube	Rutaceae	Leaves and fruits	Skin infections (Ahmad *et al*., 2014)
Zaleyapentandra	Aizoaceae	Leaf & root	Skin treatment (Shah *et al*., 2016)
Ziziphusmauritiana	Rhamnaceae	Fruit and leaf	Wound healing (Rehman *et al*., 2017)

Factors affecting wound healing: Many external and internal factors are responsible for retarded wound healing and skin regeneration. Frequently reported factors (Table 1) are as follows:

Wound healing boosters and stimulating dressings: Globally, a wide range of synthetic as well as floral cutaneous wound healers and dressings are available and currently, it is still an advancing research domain, due to their protective abilities against pathogenic invasion. Dressings are categorized on the basis of their mode of wound healing which may be debridement, antibacterial, occlusive, absorbent, adherence one that is why; dressings are classified as primary, secondary and island dressings. Primary dressings are those which attach to the wound surface whereas secondary dressings are applied on the primary dressings and cover them. Similarly island dressings have bonding agent with central absorbent zone. Other dressings include traditional, modern and advanced dressings. Traditional dressings include cotton wool, natural or synthetic bandages and gauzes. These are commonly used as primary dressings, secondary dressings, or get merged with several other dressings, each performing a specific function e.g., cotton conforming bandage is used in the retention of light dressings whereas short stretch compression bandage is used for venous leg ulcers and lymphedema. Moreover, modern dressings include hydrocolloid dressings, alginate dressings, and hydrogel dressings (Boateng *et al*., 2008).In Pakistan, commonly used skin healers are:

Synthetic: Some synthetic polymers (such as biomimetic fibers based on polyglycolic acid, polylacticacid, polyacrylicacid, poly-ε-caprolactone, polyvinylpyrrolidone, polyvinyl alcohol, polyethylene glycol) improve re-epithelialization and exhibit wound healing properties by providing an optimal microenvironment for cell propagation, immigration and differentiation due to their biocompatibility, biodegradability, diverse structural and significant mechanical properties (Mogoşanu, 2014).

Natural: Herbal therapy for skin wound healing and regeneration is in practice in Pakistan for decades. Only of Malakandvalley contributes up to 26% floral species which are important for dermal treatment (Habib-Ul-Hassan *et al*., 2015). In this review, authors tried to report published floral data of different Pakistani regions, significantly related to skin regeneration and wound healing (Table 2).

Conclusion and future perspective: It can be concluded that Pakistan is enrich in medicinal flora related to dermal cure and remediation. Further research projects should be planned for either dose optimization or for better topical appliance out comes and researchers should utilize this indigenous potential to serve humanity at low cost.

REFERENCES

Ahmad, M., Sultana, S., Fazl-i-Hadi, S., Ben Hadda, T., Rashid, S., Zafar, M*, et al.* 2014. An Ethnobotanical study of Medicinal Plants in high mountainous region of Chail valley (District Swat-Pakistan). *Journal of ethnobiology and ethnomedicine*, 10: 36.

Ahmed, E., Arshad, M., Saboor, A., Qureshi, R., Mustafa, G., Sadiq, S*, et al.* 2013. Ethnobotanical appraisal and medicinal use of plants in Patriata, New Murree, evidence from Pakistan. *Journal of Ethnobiology and Ethnomedicine*, 9: 13.

AJAIB, M., BAKHSH, H. and SIDIQUI, MF. 2015. Ethnobotanical studies of some shrubs & trees of Tehsil Ahmad Pur East, District Bahawalpur, Pakistan. *FUUAST J. Biol*, 5: 145-152.

Amjad, MS. and Arshad, M. 2014. Ethnobotanical inventory and medicinal uses of some important woody plant species of Kotli, Azad Kashmir, Pakistan. *Asian Pacific Journal of Tropical Biomedicine*, 4: 952-958.

Amjad, MS., Arshad, M. and Qureshi, R. 2015. Ethnobotanical inventory and folk uses of indigenous plants from PirNasoora National Park, Azad Jammu and Kashmir. *Asian Pacific Journal of Tropical Biomedicine*, 5: 234-241.

Barrientos, S., Stojadinovic, O., Golinko, MS., Brem, H. and Tomic-Canic, M. 2008. Growth factors and cytokines in wound healing. *Wound repair and regeneration*, 16: 585-601.

Batool, A., Shah, A. and Bahadur, A.2017. Ethnopharmacological Relevance of Traditional Medicinal Flora from Semi-Tribal Areas in Khyber Pakhtunkhwa, Punjab, Pakistan.*Pak. J. Bot*, 49: 691-705.

Begum, S., AbdEIslam, NM., Adnan, M., Tariq, A., Yasmin, A. and Hameed, R. 2014. Ethnomedicines of highly utilized plants in the temperate Himalayan region.*African Journal of Traditional, Complementary and Alternative Medicines*, 11: 132-142.

Boateng, JS., Matthews, KH., Stevens, HN. andEccleston, GM. 2008. Wound healing dressings and drug delivery systems: a review. *Journal of pharmaceutical sciences*, 97: 2892-2923.

Clark, RA. 1990. Fibronectin matrix deposition and fibronect in receptor expression in healing and normal skin. *Journal of Investigative Dermatology*, 94: s128-s134.

Delavary, BM., van der Veer, WM., van Egmond, M., Niessen, FB. And Beelen, RH. 2011. Macrophages in skin injury and repair. *Immunobiology*, 216: 753-762.

Desmouliere, A., Redard, M., Darby, I. and Gabbiani, G. 1995. Apoptosis mediates the decrease in cellularity during the transition between granulation tissue and scar. *The American journal of pathology*, 146: 56.

Ffrench-Constant, C., Van De Water, L., Dvorak, HF. and Hynes, RO. 1989. Reappearance of an embryonic pattern of fibronectin splicing during wound healing in the adult rat. *The Journal of cell biology*, 109: 903-914.

Gosain, A. and DiPietro, LA. 2004. Aging and wound healing. *World journal of surgery*, 28: 321-326.

Guo, Sa. and DiPietro, LA. 2010. Factors affecting wound healing. *Journal of dental research*, 89: 219-229.

Gurtner, GC., Werner, S., Barrandon, Y. and Longaker, MT. 2008. Wound repair and regeneration. *Nature*, 453: 314.

Habib-Ul-Hassan, WM., Ahmad, N., Tariq, A., Khan, I., Akhtar, N. and Jan, S. 2015. Indigenous uses of the plants of Malakand valley, district Dir (Lower), Khyber Pakhtunkhwa, Pakistan. *Pak. J. Weed Sci. Res*, 21: 83-99.

Heilmann, S., Küchler, S., Wischke, C., Lendlein, A., Stein, C. and Schäfer-Korting, M. 2013. A thermosensitive morphine-containing hydrogel for the treatment of large-scale skin wounds. *International journal of pharmaceutics*, 444: 96-102.

Hinz, B. 2007. Formation and function of the myofibroblast during tissue repair. *Journal of Investigative Dermatology*, 127: 526-537.

Iqbal, T., Rehman, HU., Jan, RU., Khan, MGR., Ahmad, N., Nisar, J, *et al.* 2014. Ethnomedicinal study of flora of district karak, khyberpakhtunkhwa, pakistan. *International Journal*, 2: 88-93.

Ito, M., Liu, Y., Yang, Z., Nguyen, J., Liang, F., Morris, RJ, *et al.* 2005. Stem cells in the hair follicle bulge contribute to wound repair but not to homeostasis of the epidermis. *Nature medicine*, 11: 1351.

Khan, I., Abd-Ur-Rehman, AS., Aslam, S. and Mursalin, M. 2016. Importance of Ethnomedicinal Flora of SaraiAlamgir (Boundary Side of River Jhelum) District Gujrat, Punjab, Pakistan. *Med Aromat Plants (Los Angel)*, 5: 2167-0412.1000264.

Khan, IA., Aziz, A., Sattar, M., Munawar, SH., Manzoor, Z., Raza, MA, *et al.* 2015. Evaluation of wound healing potential of Rumexvesicarius L. Leaf extract and fractions in rabbit. *African Journal of Traditional, Complementary and Alternative Medicines*, 12: 60-64.

Khan, SM., Page, S., Ahmad, H., Shaheen, H., Ullah, Z., Ahmad, M, *et al.* 2013.Medicinal flora and ethnoecological knowledge in the Naran Valley, Western Himalaya, Pakistan.*Journal of ethnobiology and ethnomedicine*, 9: 4.

Kolluru, GK., Bir, SC. and Kevil, CG. 2012. Endothelial dysfunction and diabetes: effects on angiogenesis, vascular remodeling, and wound healing. *International journal of vascular medicine*, 2012.

Langton, AK., Herrick, SE. and Headon, DJ. 2008. An extended epidermal response heals cutaneous wounds in the absence of a hair follicle stem cell contribution. *Journal of Investigative Dermatology*, 128: 1311-1318.

Martin, P. 1997. Wound healing--aiming for perfect skin regeneration. *Science*, 276: 75-81.

Mogoşanu, GD. and Grumezescu, AM. 2014. Natural and synthetic polymers for wounds and burns dressing. *International journal of pharmaceutics*, 463: 127-136.

O'toole, E. 2001. Extracellular matrix and keratinocyte migration. *Clinical and experimental dermatology*, 26: 525-530.

Qureshi, R. 2012. Medicinal flora of hingol national park, Baluchistan, Pakistan. *Pak. J. Bot*, 44: 725-732.

Qureshi, R. and Bhatti, GR. 2008. Ethnobotany of plants used by the Thari people of Nara Desert, Pakistan. *Fitoterapia*, 79: 468-473.

Rahmatullah, M., Ishika, T., Rahman, M., Swarna, A., Khan, T., Monalisa, MN, *et al.* 2011. Plants prescribed for both preventive and therapeutic purposes by the traditional healers of the Bede community residing by the Turag River, Dhaka district. *American Eurasian Journal of Sustainable Agriculture*, 5: 325-331.

Rehman, MN., Ahmad, M., Sultana, S., Zafar, M. and Edwards, S. 2017. Relative popularity level of medicinal plants in Talagang, Punjab Province, Pakistan. *RevistaBrasileira de Farmacognosia*, 27: 751-775.

Rojas, I-G., Padgett, DA., Sheridan, JF.andMarucha, PT. 2002. Stress-induced susceptibility to bacterial infection during cutaneous wound healing. *Brain, behavior, and immunity*, 16: 74-84.

Schultz, GS., Davidson, JM., Kirsner, RS., Bornstein, P. and Herman, IM. 2011. Dynamic reciprocity in the wound microenvironment. *Wound Repair and Regeneration*, 19: 134-148.

Shah, A., Marwat, SK., Gohar, F., Khan, A., Bhatti, KH., Amin, M, *et al.* 2013. Ethnobotanical study of medicinal plants of semi-tribal area of Makerwal&GullaKhel (lying between Khyber Pakhtunkhwa and Punjab Provinces), Pakistan. *American Journal of Plant Sciences*, 4: 98.

Shah, AA.,Ramzan, M. and Saba, R. 2016. Ethnoecological Studies of Herbs and Shrubs of Miani Sahib Graveyard, Lahore City, Punjab, Pakistan.*Journal of Bioresource Management*, 3: 5.

Singer, AJ. and Clark, RA. 1999. Cutaneous wound healing. *New England journal of medicine*, 341: 738-746.

Snippert, HJ.,Haegebarth, A., Kasper, M., Jaks, V., van Es, JH., Barker, N, *et al.* 2010. Lgr6 marks stem cells in the hair follicle that generate all cell lineages of the skin. *Science*, 327: 1385-1389.

Sørensen, LT. 2012. Wound healing and infection in surgery: the pathophysiological impact of smoking, smoking cessation, and nicotine replacement therapy: a systematic review. *Annals of surgery*, 255: 1069-1079.

Taylor, G., Lehrer, MS., Jensen, PJ., Sun, T-T. andLavker, RM. 2000. Involvement of follicular stem cells in forming not only the follicle but also the epidermis. *Cell*, 102: 451-461.

Ullah, SUA. and Rashid, A. 2014. Medicinal diversity of weeds in the historical valley of landikotalkhyber agency pakistan. *Pakistan Journal of Weed Science Research*, 20.

Umair, M., Altaf, M. and Abbasi, AM. 2017. An ethnobotanical survey of indigenous medicinal plants in Hafizabad district, Punjab-Pakistan. *PloS one*, 12: e0177912.

Watt, FM. and Fujiwara, H. 2011. Cell-extracellular matrix interactions in normal and diseased skin. *Cold Spring Harbor perspectives in biology*, 3: a005124.

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