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WOUND HEALING ACTIVITY OF SOME MEDICINAL PLANTS: REVIEW

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ABSTRACT: The traditional Indian medicine - Ayurveda, describes various herbs, fats, oils and minerals with anti-aging as well as wound healing properties. Wounds are the result of injuries to the skin that disrupt the soft tissue. Wound healing can be defined as a complex dynamic process results in the restoration of anatomic continuity and function. Various plant products have been used in the treatment of wounds over the years. Wound healing herbal extracts promote blood clotting, fight infection, and accelerate the healing of wounds. Hence in the current review, a list of the plants used in traditional medicine for the treatment of wounds was screened. It is a beneficial work for researchers to provide many details about the wound healing herbs and development of safe and effective and globally accepted herbal drugs for cuts and wounds.

INTRODUCTION: Skin diseases are among the most common health problems worldwide and are associated with a considerable burden. The burden of skin disease is a multidimensional concept that encompasses psychological, social and financial consequences of the skin disease on the patients, their families and on society. Chronic and incurable skin diseases, such as psoriasis and eczema, are associated with significant morbidity in the form of physical discomfort and impairment of patients' quality of life; whereas malignant diseases, such as malignant melanoma, carry substantial mortality. With the availability of a wide range of health status and quality-of-life measures, the effects of most skin diseases on patients' lives can be measured efficiently.

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This review aims to present some of the published data to highlight the magnitude of the burden associated with some common skin diseases and also to suggest ways to quantify this burden of skin disease [1]. A Corn (or clavus, plural clavi or clavuses) is a distinctively shaped callus of dead skin that usually occurs on thin or glabrous (hairless and smooth) skin surfaces, especially on the dorsal surface of toes or fingers. They can sometimes occur on the thicker palmar or plantar skin surfaces. Corns form when the pressure point against the skin traces an elliptical or semi-elliptical path during the rubbing motion, the center of which is at the point of pressure, gradually widening. If there is constant stimulation of the tissue producing the corns, even after the corn is surgically removed, the skin may continue to grow like corn [2].

Presentations: The hard part at the center of the corn resembles a barley seed that is like a funnel with a broad raised top and a pointed bottom. Because of their shape, corns intensify the pressure at the tip and can cause deep tissue damage and

ulceration [1]. Hard corns are especially problematic for people with insensitive skin due to diabetes *etc*. The scientific name for corn is heloma (plural helomata). A hard corn is called heloma durum, while soft corn is called a heloma molle. The location of soft corns tends to differ from that of hard corns. Hard corns occur on dry, flat surfaces of skin. Soft corns (frequently found between adjacent toes) stay moist, keeping the surrounding skin soft. The corn's center is not soft, however, but indurated. Although, corns and calluses are often talked about together, they are separate conditions[3].

Corns generally occur on the tops and sides of the toes. A hard corn is a small patch of thickened, dead skin with a small plug of skin in the center. Soft corn has a much thinner surface, appears whitish and rubbery, and usually occurs between the toes. Seed corns are clusters of tiny corns that can be very tender if they are on a weight-bearing part of the foot. Seed corns tend to occur on the bottom of the feet, and some doctors believe blocked sweat ducts cause this condition [4]. Calluses are hard and rough-feeling areas of skin that can develop on hands, feet or anywhere there is repeated friction - even on a violinist's chin. Like corns, calluses have several variants. The common callus usually occurs when there has been a lot of rubbing against the hands or feet. A plantar callus is found on the bottom of the foot.

Diagnosis and Workup: To exclude other differential diagnoses, a skin biopsy may be taken. Imaging studies can be used to detect any underlying bony abnormalities that cause abnormal pressure on the overlying skin. For this purpose, a plain radiograph usually suffices, but, occasionally, CT scanning is used [5].

Treatment: Treatment of corns include paring of the lesions, which immediately reduces pain. However, if an abnormal pressure source remains, the corn generally returns. If the source of any abnormal pressure is detected, this may be avoided, such as with orthotics and conservative footwear with extra toe space. If no other treatment is effective, surgery may be performed. Most corns and calluses gradually disappear when the friction or pressure stops, although your doctor may shave the top of a callus to reduce the thickness. Properly positioned moleskin pads can help relieve pressure on corn. There are also special corn and callus removal liquids and plasters, usually containing salicylic acid, but these are not suitable for everyone. Oral antibiotics generally clear up infected corns, but pus may have to be drained through a small incision. [6, 7]

Plants Profile:
***Lantana Camara*: [16, 17]**

FIG. 1: *LANTANA CAMARA*

Biological Source: It is dried leaves of plant *Lantana camara* Linn. belonging to the family Verbenaceae. *Lantana camara*, is a species of flowering plant within the verbena family, Verbenaceae.

Synonyms: Big-sage (Malaysia), wild-sage, red-sage, white sage Caribbean) (South Africa).

Description: *Lantana camara* has small tubular shaped flowers which each have four petals and are arranged in clusters in terminal areas stems. Flowers come in many different colors including red, yellow, white, pink and orange which differ depending on location in inflorescences, age, and maturity. After pollination occurs the color of the flowers change (typically from yellow to orangish, pinkish, or reddish), this is believed to be a signal to pollinators that the pre-change color contains a reward as well as being sexually viable, thus increasing pollination efficiency. The leaves are broadly ovate, opposite, and simple and have a strong odor when crushed. The fruit of *L. camara* is a berry-like drupe which turns from green to dark purple when mature.

Parts Used: Flowers and leaves.

Distribution: Throughout India.

Chemical Constituents: Flavonoid, glycoside, polysaccharide, monosaccharide, alkaloids, and steroids. It also contains terpenes and saponin responsible for wound healing activity uses. The essential oil, obtained by hydrodistillation of shade-dried leaves of *L. camara*, trans-caryophyllene (13.95%), bicyclogermacrene (9.77%), α-curcumene (8.57%) and D (3.13%) as the most abundant compounds.

Monoterpene hydrocarbons, the second major class of compounds constituted 34.14% of the oil with sabinene (8.28%), α-pinene (4.03%) and γ-terpinene (3.83%) as the major components, whereas oxygenated monoterpenes comprised only 18.82%, having (E)-citral (6.90%), (Z)-citral (3.48%) and 1, 8 cineole (5.06%) in appreciable amounts. The remaining chemical constituents were detected in lesser amounts.

Uses: Studies conducted in that Lantana leaves can display antimicrobial, fungicidal and insecticidal properties. Use as antiseptic, inflammatory and antibacterial and also practically recovered cut, ulcers and swellings. Oleanolic acid is a chemical component consist of the root of this plant used as oral drugs that can cure human liver disorders such as anti hyperlipidemias and anti-tumor-promoting agent. The highest percentage of insecticide component in flower help the flower essential oil promotes the *Aedes* mosquito oviposition. Wound healing activity. Anti-inflammatory activity.

Lantana camara has also been used in traditional herbal medicines for treating variety. *Lantana camara* L. used in herbal medicine for the treatment of skin itches, as an antiseptic for wounds, and externally for leprosy and scabies. Major natural products investigated in *Lantana camara* L. belong to the group of triterpenoids, flavonoids and other compounds.

Moringa Oleifera: [18]

Biological Source: *Moringa oleifera* is the most widely cultivated species of the genus *Moringa*, which is the only genus in the family Moringaceae.

Synonym: English common names include: Moringa, Drumstick tree, Dorseradish tree, Shevga.

FIG. 2: ***MORINGA OLEIFERA***

Description: *M. oleifera* is a fast-growing, deciduous tree. It can reach a height of 10-12 m (32–40 ft) and the trunk can reach a diameter of 45 cm (1.5 ft). The bark has a whitish-grey color and is surrounded by thick cork. Young shoots have purplish or greenish-white, hairy bark. The tree has an open crown of drooping, fragile branches and the leaves build up feathery foliage of tripinnate leaves.

The flowers are fragrant and bisexual, surrounded by five unequal, thinly veined, yellowish-white petals. The flowers are about 1.0-1.5 cm (1/2") long and 2.0 cm (3/4") broad. They grow on slender, hairy stalks in spreading or drooping later flower clusters which have a length of 10-25 cm. Flowering begins within the first six months after planting. In seasonally cool regions, flowering only occurs once a year between April and June. In more constant seasonal temperatures and with constant rainfall, flowering can happen twice or even all year-round.

Parts Used: Flowers and Leaves.

Distribution: Throughout India.

Chemical Constituents: *Moringa oleifera* is a medicinal plant widely used in folkloric medicine of Africa and Asia for the treatment of ailments such as ulcer, wound, inflammation, heart problem, cancer, stroke, obesity, anemia, and liver damage. The chemical constituents of the methanolic extract of *Moringa oleifera* leaves and seeds were investigated using Gas chromatography-mass spectrometry. Sixteen chemical constituents were identified in the leaf methanolic extract; they are 9-

octadecenoic acid (20.89%), L-(+)-ascorbic acid-2,6-dihexadecanoate (19.66%), 14–methyl-8-hexa decenal (8.11%), 4-hydroxyl-4-methyl-2-pentanone (7.01%), 3-ethyl-2, 4- dimethyl-pentane (6.14%), phytol (4.24%), octadecamethyl-Cyclopentasi-loxane (1.23%), 1, 2- benzene dicarboxylic acid (2.46%), 3, 4-epoxy-ethanone comprising (1.78%), N-(-1- methylethyllidene) - benzene ethanamin Main chemical components are pterygospermin, moringine, moringinine spirochin, behenic acid, moringic acid, niazinin A & B, niazimicin, campesterol, stigmasterol, beta-sitosterol and amino acids. The root bark of the plant contains two alkaloids, *viz* moringin, moringninie & pterygospermin.

It has anti-inflammatory antibacterial & counter-irritant action, which helps in wound healing. The leaves of the plant have also been reported for its anti-tumor, hypotensive, & antioxidant, radio-protective, anti-inflammatory & diuretic properties. It is mainly used for the bowel disorders, including arthritis, atherosclerosis, bladder infections, boils, burns, cancer, chronic fatigue syndrome, circulatory weakness, cold, congestion, constipation, diabetes, eye inflammations, fever, fractures, gastric ulcers, gingivitis, headaches, heart diseases, hypertension, immune weakness, indigestion, intestinal parasites, kidney disease, malaria, menstrual cramps, mouth sores, respiratory disorders, ringworms, sinusitis, sprains, stroke, skin inflammation & wounds. The aqueous extract was studied, and it was found that there was the significant increase in wound closure rate, skin-breaking strength, granuloma breaking strength, hydroxyproline content, granuloma dry weight and decrease in scar area was observed.

***Tecoma Capensis*: [19, 20]**

Biological Source: It is a fresh Leaves of plant *Tecoma capensis* Thunb. is a species of flowering plant in the family Bignoniaceae, native to southern Africa. Despite its common name, it is not closely related to the true honeysuckle.

Synonyms: *Bignonia capensis, Tecomaria capensis* and *Tecoma petersii*. Cape honeysuckle.

Description: An erect, scrambling shrub, it grows to 2–3 m (7–10 ft) in height and a similar width. Usually evergreen, it may lose its leaves in colder climates. In certain habitats it may scramble, meaning that it shoots out long growth tips which lean on the stems and branches of other plants, as well as boulders, trellises, fences, and walls; this can lead to the plant appearing untidy. The leaves are up to 15 cm (6 in) long. They are opposite, slightly serrated, green to dark-green, and pinnate with 5 to 9 oblong leaflets. The flowers are tubular, narrow, about 7.5 cm (3 in) long, and are produced at different times throughout the year. They are grouped in 10 - 15 cm (4 - 6 in) long terminal clusters. The flower color ranges from orange to orange-red to apricot.

FIG. 3: *TECOMA CAPENSIS*

Parts Used: Flowers and Leaves.

Distribution: Throughout India.

Chemical Constituents: The *Tecoma capensis*, the presence of sterols, flavonoids, terpenes, tannins, resins, carbohydrates and phenolic nucleus in all the species whereas, Phlobatanins and alkaloids remained absent in all the species. *T. capensis* and chloroform extract of *T. rosea*. Past studies proved that anti-dysenteric and anti-diarrhoeal properties of medicinal plants have been due to the presence of alkaloids, flavonoids, and saponins. Saponins were present in at least one extract of all tested flowers. Saponins have been responsible for antioxidant activities. Phenolic compounds, steroids, and glycosides were noticed in the tested flowers of Bignoniaceae. Tannins have been widely used in the treatment of sprains, bruises, and superficial wounds. Phytocompounds like flavonoids and phenolic compounds commonly found in plants have been reported to have multiple biological effects, including antioxidant activities.

Uses: The ethanolic extract of *Tecomaria capensis* was screened anti-inflammatory Antiulcer, Analgesic activity. The plant is used as a traditional medicine to relieve pain & sleeplessness. Dried & powdered bark infusions are taken for sleeplessness. It is included in the list of African plants evaluated for *in-vitro* anti-plasmodial activity against *Plasmodium falciparum*. Previously methanol extract of *Tecomaria capensis* leaves reported as antimicrobial and antioxidant. *Tecomaria capens* is known to promote the wound healing process mainly due to their astringent, anti-microbial & free radical scavenging activities *Tecomaria capensis* significantly stimulated wound contraction. The breaking strength of the treated incision wounds increased in *Tecomaria capensis* extract when treated groups compared with the control group. These findings support the wound healing activity of this plant.

***Barleria Prionitis*: [19]**

FIG. 4: *BARLERIA PRIONITIS*

Biological Source: It is a fresh Leaves of plant *Barleria prionitis,* is a species of plants belonging to the family Acanthaceae.

Synonyms: Barleria prionitis, Sanskrit kuranta; Marathi Vjradanti.

Parts of Plant Use: Leaves.

Distribution: Throughout India.

Description: Porcupine flower is an erect, prickly shrub, usually single-stemmed, growing to about 1.5 m tall. The stems and branches are stiff and smooth and light brown to light grey in color. The leaves are up to 100 mm long and 40 mm wide, and oval-shaped though narrow at both ends (ellipsoid) The base of the leaves is protected by three to five sharp, pale colored spines, 10-20 mm long. The yellow-orange tubular flowers are found bunched tightly together at the top of the plant, but they also occur singly at the base of leaves. The flowers are 40 mm long and tubular, with several long protruding stamens. The seed capsule is oval-shaped and 13-20 mm long, with a sharp pointed beak. It contains two fairly large, flat seeds, typically 8 mm long by 5 mm wide, covered with matted hairs. Barleria has a central taproot, with lateral roots branching off in all direction.

Chemical Constituents: *Barleria prionitis* is often the host to larvae of the *Phalanta phalantha* and *Junonia lemonias* butterflies. Its leaves are known to contain 6-Hydroxyflavone, one of the chemical compounds that are a noncompetitive inhibitor of the protein cytochrome. From the aerial parts of *Barleria prionitis*, one new phenylethanoid glycoside, barlerinoside along with six known iridoid glycosides, shanzhiside methyl ester, 6-O-trans-p-coumaroyl-8-O-acetylshanzhiside methyl ester, barlerin, acetylbarlerin, 7-methoxy diderroside, and lupulinoside were isolated.

Uses: It has numerous medicinal properties including treating fever, respiratory diseases, toothache, joint pains and a variety of other ailments; and it has several cosmetic uses. A mouthwash made from root tissue is used to relieve toothache and treat bleeding gums. For example, the leaves are used to promote healing of wounds and to relieve joint pains and toothache. Because of its antiseptic properties, extracts of the plant are incorporated into herbal cosmetics and hair products to promote skin and scalp health. Antioxidant activity, reduce blood glucose level.

CONCLUSION: Corn and associated risk is a very common skin problem among worldwide population very few formulations are available in the market. Present research is undertaken to develop corn treating formulation by using natural keratolytic property having plant parts. Selected plant collected from local Amravati region, identified and authenticated from a competent botanist. Preliminary phytochemical screening showed the presence of keratolytic phytochemical like alkaloids steroids, tannins. Aqueous extracts

were prepared for each plant part, four different batches of ointments with varying composition of plant extracts and other necessary ingredients. Ointment form of delivery preferred due to long term contact with corn and water resistant capacity.

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