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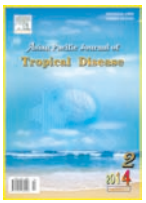

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Effective herbs on the wound and skin disorders: a ethnobotanical study in Lorestan province, west of Iran

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ABSTRACT

Objective: To identify medicinal plants in Lorestan Province (west of Iran) in treatment of wound healing and skin lesions.
Methods: Questionnaire were made by health volunteers who were trained. The questionnaire about the beliefs and herbal therapy were filled by liaisons trained in the villages.
Results: Questionnaire survey showed that 18 medicinal plants from 11 plant families were detected in the province for treating and healing skin lesions.
Conclusions: The achieving information in the study reported that bioactive substances in some plants have pharmacologic effects in regulating biological processes which can accelerate healing, reducing inflammation and improving health effects. Suggested ideas in this study should be tested in clinical trials and the effectiveness of their therapeutic effects, their effective recognition and secondary materials in the form of natural medicine must be detected for releasing into the pharmaceutical market.

1. Introduction

Skin health in humans and animals is crucial for protection against water loss, bleeding and the entry of microorganisms. The healing of damaged skin is a complex and sophisticated mechanism. In the process of healing, the wound is caused by the rupture, quickly closed; once re-epithelialization on wound surface occurred, the new matrix will quickly replace in the lost dermis[1].

When that barrier was broken and skin damaged, the skin became infected. Wound infection is one of the most serious complications that will occur in the acute phase of injury. Pseudomonas infections are very common in this area and are resistant to most antibiotics. If the infected wound healing was delayed it eventually would lead to chronic ulcers and infections could be sustained. Chronic wounds can cause tissue trauma and even death of tissue[2,3]. Wound healing is a coordinated response among the extracellular matrix, blood cells and parenchymal cells[4]. For the treatment of skin injuries some agents are used such as betadine solution, acetic acid, saline and antibiotic ointments. However, recent research indicates that many of the solutions used for skin wound healing are toxic to fibroblasts, lymphocytes and cells[5].

Using natural products for medical and therapeutic purposes, dated back to thousands of years ago, was known in Iran as Iranian traditional medicine[6]. Research results show that the use of natural products and traditional medicine in the treatment of many diseases and injuries has spread throughout the world[7,8]. Studies show that more than 80% of the world population uses traditional medicine for the treatment and approximately one third of all drugs were traditionally used for skin disorders and wounds[9-12].

Traditional healing has a long history. Egyptians, Assyrians, Chinese, Greeks and Romans have used the honey alone or in combination with medicinal plants to treat the wounds[13]. In countries like China and India

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where traditional medicine has a long history, the important information regarding the use of plants to treat wounds is unknown[14].

Several attempts have been made to find drugs in traditional medicine to accelerate healing of skin lesions. However, studies continue to find wound healing due to the introduction of a certain drugs to increase the rate of wound healing, herbal medicine and its impact[15]. Today because of marked adverse effects, adverse and unintended result of the use of chemical agents, reuse of medicinal plants is increasing and studies about this matters become enhanced. Therefore, use of drugs and antibiotics medicine are derived from industrial plants such as antibiotics has been considered[16,17].

Scientists always try to find new and effective treatment of plants' medicine so as to improve wound healing. The use of some medicinal plants is suggested by the World Health Organization. It is necessary to study the effects of herbal drugs[18,19].

Due to the importance of ethnobotanical studies, this study was carried out to identify medicinal plants native in Lorestan Province (west of Iran) for the treatment of wound healing and skin lesions.

2. Materials and methods

2.1. The study area

Lorestan is a province of Western Iran, located in the latitude and longitude of 33.487 1 °N, 48.353 8 °E. Lorestan has four different climates (semi-dry, semi-moist temperate, semi-moist cold, altitude climate). Its area is approximately 28 300 square acres of land. Minimum height above sea level is 330 m in Pole-Zal and maximum height above sea level is 4 050 m in Oshtoran-Kooh.

The province has a varied climate and this variability is quite evident from the northeast to the southwest. Lorestan is neighbored on Hamedan and Markazi provinces in north, Isfahan in east, Khuzestan in south and Ilam and Kermanshah in west.

2.2. Method of identifying and collecting data of traditional medications

Data of traditional medications were provided through interviews and questionnaires, with assistance of Management and Planning Organization of Lorestan Province and Lorestan University of Medical Sciences. Local inhabitants data were also collected through cooperation with Health Networks of Dorud, Burujird, Khorramabad, Aleshtar Poldokhtar, Aligoodarz, Nurabad and Kouhdasht.

3. Results

The results of the review information about medicinal herbs revealed that 18 plants from 11 plant families are effective for curing wounds and skin lesions. And the information also included the use and the effect of the effective herbal treatment for skin lesions, their scientific name, family name, local name specified in Table 1.

Table 1
The ethnobotanical information of 18 effective herbs used for healing skin lesions.

Science name	Family	The local name	The Persian name	The used part	The season of collection	The treatment effect
Althaea officinalis	Malvaceae	Khatmi	Khatmi	Flower, seed	Spiring, early summer	Wound healing
Artemisia annua	Asteraceae	Khersdari	Dermaneh	Flower, stem	Spiring	Ulcers and warts healing
Cherozophora obliqua	Euphorbiaceae	Ghiahe Dakh	Ghiahe Dagh	Leaf, stem, root	Spiring	Removal of moles, warts and pimples
Citrus limonum	Rutaceae	Limo	Limo	Fruit	Early autumn	Ameliorate skin rash
Daphne mucronata	Thymelaeaceae	Toli	Mazarion	Leaf	All seasons	Wound healing
Eqinops spp.	Asteraceae	Ghan shakrouk	Tighal Sugar	Fruit	Summer	Treatment of skin ulcers and boils
Lens culinaris	Fabaceae	Adas	Adase Germez	Fruit	All seasons	Wound healing
Malva neglecta	Malvaceae	Touleh	Panirak	Leaf, stem	Spiring, early summer	Treatment of skin ulcers and boils
Mentha longifolia	Lamiaceae	Pineh	Pouneh	Leaf, flower	Spiring , summer	Disinfection and removal of skin allergy
Narcissus papyraceus	Amaryllidaceae	Narges	Narges	Root	summer, autumn	Wound healing
Peganum harmala	Zygophylaceae	Espand	Espand	Seed	summer	Wound healing
Picromon acarna (L.) cass	Compositae	Khare Zard	Khare Zard	Flower	Spiring	The melancholy of wound healing, removing blemishes and acne
Pistacia atlantica	Anacardiacea	Adamse Golang	Pesteye Kouhi	Sap	All seasons	Corrosion and disinfect the wound healing beam
Pistacia khinjuk	Anacardiacea	Berije Kouhi	Boneh	Sap	Summer	Disinfection of wounds
Plantago mojor	Plantaginaceae	Khourchang	Barhang	Leaf	Spiring	Healing cuts, wounds and boils
Scrophularia striata	Scrophulariaceae	Toshang Darou	Ghole Meimouni	All Part of plant	All seasons	Wound healing
Urtica dioica	Urticaceae	Gazgazou	Gazane	Branch	Spiring, summer	Rash treatment
Vigna radiata	Fabaceae	Mash	Mash	Seed	autumn	Treatment of skin ulcers and measles

4. Discussion

Healing can be classified into three stages: the first is fibroblast proliferation; the second and third phases are construction of proliferation and migration of vascular lining. The first stage in young tissue formation and wound contraction also occurs through the action of these tissues. Stage of new granulation tissue is characterized with the presence of fibroblast cells, large fusiform nuclei and swells along the recent formation of blood vessels. The porous membrane with edema and erythrocyte component profile in the arteries is prominent in these tissues. New granulation tissue gradually replaces old granulation tissue and the vascular basement membrane and two vascular epithelium with completed nucleus are simply squamous. And therefore the reduction of vascular leakage will lead to reduced edema[20].

Wound healing process is traditionally divided into hemostasis, inflammation, proliferation, and remodeling. In new classification, the process of wound healing is divided into two major phases: the early phase and the cellular phase.

The early phase, which begins immediately following skin injury, involves cascading molecular and cellular events leading to hemostasis and formation of an early, makeshift extracellular matrix that provides structural support for cellular attachment and subsequent cellular proliferation.

The cellular phase involves several types of cells working together to mount an inflammatory response, synthesize granulation tissue, and restore the epithelial layer.

Therapeutic use of hollyhock has long been among the common people. Hollyhock root shows effects of softening and removal of skin irritation and inflammation and ameliorates severe cough[21,22]. Hollyhock root contains flavonoids and a group of polyphenols[23,24]. Flavonoids found in a hollyhock root induces endothelial-dependent and -independent relaxation of human coronary artery[25].

Artemisia has antiseptic, antitussive, carminative, tonic, antipyretic and analgesic, anti-parasite *Ascaris*, anti-inflammatory, anti-visceral pain and anti-headache properties. *Artemisia* has been used to relieving pain, neurological diseases and hepatitis[26-33]. Anti-inflammatory and antioxidant activities of *Artemisia* species including mountain sagebrush has been reported[34]. In a study, wound healing effect of *Artemisia aucheri* has been demonstrated[35]. Possibly reducing inflammation, accumulation of free radicals and oxidants may improve wound healing.

Lemon is one of the most important citrus. Citric and acidic conditions are used in the treatment of intestinal infections and cholera in different parts of the world since its high antibacterial effect especially against *Vibrio cholerae*[36,37].

Essence of lemon were examined on Gram-negative pathogens such as *Escherichia coli*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, *Proteus vulgaris* and Gram-positive pathogens such as *Staphylococcus aureus* and *Bacillus subtilis* and its positive effects were proved[38]. Effect of ethanol extract of lemon on skin lesions caused by *Staphylococcus aureus* in animal models has been demonstrated[39]. Analgesic and anti-inflammatory effects of limonene in lemon mixture have been determined[40]. It appears that the active ingredients with antimicrobial and anti-inflammatory herbs lead to healing.

Malva sylvestris is containing anthocyanin and mucilage[41]. Anthocyanins have a wide range of biological activities including antioxidant activity[42]. Antimicrobial and antioxidant properties of the essence and extracts of many plant species, including the mountain pennyroyal such as *Mentha pulegium*, *Mentha rotundifolia*, *Mentha piperita*, *Mentha longifolia* has been demonstrated[43,44].

The therapeutic effect of *Origanum vulgare* for instance is to relieve digestive disorders, vomiting, anorexia, ulcerative colitis and liver disorders[45,46].

Antirrhinum majus materials, including alkaloids, resins, glycosides, iridoids and cryptophilic acid[47,48]. *Antirrhinum majus* plants in Iranian traditional medicine were used for superficial infection. Also, its effect on the bacteria *Pseudomonas aeruginosa* and *Staphylococcus aureus* has been confirmed[49]. *Scrophularia deserti* has a strong anti-*Candida albicans* effect[50,51]. *Scrophularia striata* Boiss contains alkaloids, anthraquinone, flavonoids, glycosides, sugars, redox, saponins, tannins, terpenoids and steroids[52].

Skin wound healing process includes the coordination among tissues, cells and numerous other factors[53]. Wound healing is regulated by a series of biological processes, including inflammation, fibrous hyperplasia, angiogenesis, the formation of new collagen fibers, epithelialization, different types of cell migration, granulation tissue formation and wound contraction. It requires a coordinated interaction among inflammatory cells, fibroblasts, keratinocytes, and biochemical mediators and extracellular matrix[54]. The main reasons for the delay in wound healing including the inflammation and insufficient new vessels[55].

Revival of traditional medicine along with the collection, classification, investigation and evaluation, is a essential step in achieving strong knowledge and provides maximum safety for people and is benefit in growing national confidence[56-65].

The information achieved by the study reported that bioactive substances in some plants have pharmacologic effects in regulating biological processes which can accelerate healing, reduce inflammation and improve health effects. It is suggested from this study that these plants should be tested in clinical trials and the effectiveness of their therapeutic effects, their effective recognition and secondary materials in the form of natural medicine should be detected for releasing into the pharmaceutical market.

Conflict of interest statement

We declare that we have no conflict of interest.

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