



Low Back Pain Treatments in Traditional Iranian Medicine

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Authors' contributions

This work was carried out in collaboration among all authors. Author VGM designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors SP and AA managed the analyses of the study. Author AA managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Back pain and back problems are one of the most common causes for referring patients to health care specialists that have a large economic cost. Therefore, it is considered necessary to find effective treatment for these patients. For the treatment of back pain, various methods as complementary and alternative medicine and industrial drugs are used; that the efficiency of these medicine methods for treatment of back pain is not without dispute. From a variety of traditional methods for treatment of back pain can be cited: the use of medicinal herbs for example: *Aloe vera* (Family: *Liliaceous*), *Chamomile* (Family: *Asteraceae*), *Rosemary* (Family: *Peppermint*), *Ginger* (Family: *Zingiberaceae*), *Colchicum* (Family: *Colchicaceae*), *Curcuma* (Family: *Zingiberaceae*), and use of Medicinal Methods for example: cupping/hijamat, leech therapy, bloodletting, and gams; therefore, this review was conducted in order to evaluate the effectiveness of these methods which used in traditional remedies for the betterment of back pain.

Keywords: *Low back pain; treatments; alternative medicine; traditional iranian medicine.*

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1. INTRODUCTION

Research in complementary and alternative medicine has increased over the past fifteen years and the research literature in this area is growing steadily, which subsequently leads to the validation of techniques in this field. Specifically, the number of randomized trials of complementary treatments have doubled approximately every five years [1]. In a recent study between 2001 to 2005 in Canada, found that 12.4% of Canadians visited a CAM practitioner in the year they were surveyed. In research mentioned that most of the referrals to complementary and alternative medicine (CAM) are women, middle-aged people, educated people and people who experiencing chronic disease [2,3]. Back pain and back problems are one of the five most common medical conditions that CAM has often been used to treat them [3]. Among the people, it has been reported that between 16.8% to 57.2% of them have been looking for back pain treatments through CAM [3].

Back pain is said to be painful in the back region, and in Iranian medicine mentioned it as "*Vaj-e Zahar*" [4]. Back pain is one of the most common causes of referral to health and treatment specialists and is the fifth cause of referral to doctor in the United States [5,6]. Due to the high prevalence and patient's persistent need for treatment and social support and long absence from work, this disease has a very high cost of health care and treatment budget in different countries [7]. In recent years, musculoskeletal diseases, in addition to an early retirement due to the loss of working ability have led to mental diseases [8]. In 2010, 26% of the adult people in the German public health insurance system needed medical assistance at least once due to low back pain [9].

Traditional medicine in Iran with over 10000 years archaism, is a school of all scientific and practical knowledge and practices that, in addition to many recommendations and emphases in the principles of health maintaining and disease prevention, also have specific views on the treatment of diseases that distinguishes it from other schools [10,11]. In this school the treatment of diseases is carried out in three ways: 1: lifestyle modification, especially nutrition modification, 2: drug therapy, 3: acts performed by hand such as gams, cupping, phlebotomy, [12].

Lifestyle modification is made by making changes in the six essential principles of life, including air, food, and drink, sleep and awakening, body motion and rest, absorb the necessary ingredients and waste disposal of the body and mental states [13]. The first step in the treatment of diseases and lifestyle modifications is to select the appropriate diet for each patient, and the quality of food is considered for everyone, whether healthy or sick, in addition to the amount of food [12,14]. The importance of food measure in the treatment of diseases is so much that Sheikh Al-Rais. *Abu Ali Sina* (Avicenna) in his valuable book "*Ghanoon*", described nutrition as the first and most important principle of treatment [12].

In Iranian traditional medicine, for every disease, there are thousands of drugs and methods of therapies, and there are hundreds and sometimes thousands of therapeutic effects for each drug, and on the other hand, the human physical and temperament complexity and traditional medicine treatments methods are such that it is never possible to use a drug for several patients with a disease. Now, every Iranian traditional medicine practitioner, among all these methods and drugs, can choose the simplest and most effective and low complication drug according to his study, experience, creativity, and ability to treat pain [15].

Since the use of Chemical pain relief drugs to manage pain and relaxation of patient, usually results in complications, in the present study, we examine the number of traditional treatments for reducing back pain in Iranian traditional medicine.

2. MEDICINAL PLANTS

Several herbal remedies for the treatment of various types of pain have been introduced; some of them are referred to below:

Aloe vera (Aloe barbadensis Miller): *Aloe Vera* is a medicinal herb of the *Liliaceous* family. Resistant, perennial, tropical and drought tolerant herb, which is used historically for medicinal various purposes [16]. *Aloe Vera* has a thick, meaty, long leaf with twisted edges leading to a blade. *Aloe Vera* contains more than 75 nutrients and 200 active compounds including vitamins, enzymes, minerals, sugars, lignin, anthracosis, saponins, salicylic acid, and amino acids [17].

The inside of the leaf is a gel consisting of 99% water, and the remaining one is a long chain polysaccharide and other carbohydrates in small amounts. In addition, the *Aloe Vera* gel contains some amino acids, salicylic acid, ascorbic acid, vitamin A and vitamin E with antioxidant properties. The presence of hydrolyzing enzyme for quinine and prostaglandin in the *Aloe Vera* reduces pain and inflammation [18,19]. The alkaloid in it also has a painkiller and saponin has an anti-inflammatory effect [20]. Salicylic Acid also reduces pain, such as Aspirin [21].

Chamomile (Matricaria chamomilla):

Chamomile is a yearlong herbal, fragrant and 20 to 40 cm high, that grow wildling in farms, gardens, roadside, and shady places. Its stems have branches that each end to capitals 1.5 to 2 cm in size, and leaves have narrow cuts, long and leaf-like. The main origin of this plant is the various regions of the Mediterranean, but today it has found wide dispersal in Europe and the temperate regions of Asia and has been published in the United States [22,23]. The part used of this plant is the capital that separates it from the stems from May to September, and for drying, spread it in a thin cortex. This herb has anti-allergic, anti-edema, anti-histamine, anti-arthritis, anti-oxidant, anti-fungal and anti-fever effects. The herbal properties of *chamomile* are related to hydrophilic and lipophilic compounds [24].

Chamomile is used in Iranian traditional medicine as a soothing pain and fever and an antispasmodic agent. Research has shown many properties for *chamomile* that include: urinating, sweating, stomach enhancer, appetizing, digesting food, eliminate bile, periodic, healer, disinfectant, paregoric, anti-headache, anti-fever and gout, anti-paroxysm, anti-inflammatory, brain enhancer, treat acne and anti-itch [25].

Rosemary (Rosmarinus officinalis):

The *Rosemary* name derived from the Latin words "rose" means dew and "marinus" meaning the sea. *Rosemary (Rosmarinus officinalis)* is a plant of the *peppermint* family, which contains oleoresin and tannin. This herbaceous plant with a wood stem has a very aromatic green permanent leaves and light blue flowers that are native to the Mediterranean.

Several pharmacological effects, including antioxidant effects, stimulation of nerve growth factor, antimicrobial activity and pain relief for this plant have been reported [26]. And in traditional

medicine, it is used for anti-asthma, food digestion, anti-rheumatism, soothing, and remedies for circulatory disorders [26]. And it also has muscle relaxant properties [27]. And it reduces pain and stiffness in the joints in patients with osteoarthritis [28].

Ginger (Zingiber officinale):

Ginger with *Zingiber Officinalis* scientific name is from the family of *Zingiberaceae* plants, native to southwest Central Asia, consisting of 49 type and 1300 species. *Ginger* is a complex combination of medicinal compounds that consist of several hundred ingredients including beta-carotene, gingerols, curcumin, caffeic acid, capsaicin, salicylate [29].

This herb is widely used for various pharmaceutical purposes, one of them is to relieve pain. Non-steroidal anti-inflammatory drugs are known to be one of the most effective treatments for inflammation and pain. However, the undesirable effects of long-term use may be greater than their benefits, especially in those with chronic diseases, such as osteoarthritis [30]. *Ginger* has anti-nausea, muscle contraction, anti-flatulence properties [31], Platelet aggregation inhibitor, painkiller and anti-inflammatory, appetite, laxative, digesting, anti-spasmodic [31,32].

Ginger is used to treating rheumatism, infection of the throat, cough, gout, gastritis, irritable bowel syndrome, nausea and vomiting, diarrhea, influenza, migraine, intestinal colitis, toothache, impotence, arthritis, asthma, and bronchitis [33].

Surinjan (Colchicum autumnal):

Colchicum with *Colchicum autumnal* scientific name is from the order of *Liliales* and *Colchicum* category.

Colchicum grows in moderate regions, forest fountains, and shady rocky habitats under non-calcareous shells [34]. Its bulb drops to 25 to 30 centimeters deep and comes out of it six-part white or purple flowers in the fall [34].

Colchicine in *Colchicum* in the form of potentially is a toxic substance and it has secondary metabolite [34]. *Colchicine* in *Colchicum* widely has been used for therapy Acute Gout, Arthritis and joint moving away. *Colchicine* is an Alkaloids extracted from *Colchicum* that Romans were also familiar with it [35]. Extract of *Colchicum* for the first time in the 1st century AD has used the therapy of joint pain, backache, Rheumatism, and Gout special attacks. Also, it has used for its

cathartic and squeamish effect [34]. This plant and its extracts for centuries have been using for gout therapy, Rheumatism, brain apoplexy, prostate enlargement, concern treatment and Gonorrhoea [36].

Curcuma (Curcuma longa): Turmeric with *Curcuma Longa's* scientific name is a kind of plant from *Zingiberidae tier, Zingiberales* order, *Zingiberaceae* category, and it is a sort of *Curcuma*. *Curcuma* powder is a dark yellow color, which is one of the most usable spices.

The main habitat of this plant is in India. This perennial plant that grows in India and South Asia countries, requires a temperature of 20 to 30 degree Celsius and a wet humid environment. The fleshy rootstock of plant or Rhizomes, collected and after that boiling in water and then dry, gritted and yellowish orange powder is prepared.

Curcuma for its strong antioxidant properties is one of the most effective material for preventing body cell cancer [37]. Has been said that *Curcuma* can reduce the severity of Alzheimer's disease symptoms. Also, the effective substance of *Curcuma*, Curcumin, has Anti-inflammatory and painkiller similar to common narcotic drugs [38]. *Curcumin*, the effective substance of *Curcuma* has Anti-proliferation of cell effects [39], rein of lipoxigenase, Cyclooxygenase, and NF- κ B and reduce the production of inflammatory cytokines such as Alpha tumor necrosis factor and Interleukin -1 and Interleukins 10, 6, 18, reduce inducible synthesis oxide nitric and reduce the production of joint destructive enzymes contains collagenase, Elastase, and hyaluronidase.

Curcumin as an active curcuminoid in biological which has contained two curcuminoids by the name of desmethoxycurcumin and bisdemethoxycurcumin. In the insoluble in the water setting, *Curcumin* is usually extracted by using ethanol or dimethyl sulfoxide (DMSO) and the pure Curcumin like *Curcuma*, is yellow-orange color. Despite the low clinical trials in the field of *Curcuma* examination, a significant amount of evidence proves the anti-inflammatory effect of curcumin.

This evidence is the acceptable pathophysiological mechanism for an intervertebral inflammatory pain that may be eradicated by oral curcumin [40].

3. MEDICINAL METHODS

Below, four remedial Methods for treatment of various types of pain have been introduced:

Cupping/Hijamat: Cupping is an ancient medical technique used in several ancient cultures [41]. Also used nowadays in parts of Europe and the Orient and Iran. *Hijamat* comes from the Hajm lexical root and it means volume creation that by shafting and creating negative pressure, causes to accumulate fluids under the skin and creating inflammation and congestion in that area by surface cuts and emitted again shafting [42].

The general four types of cupping are doing: A-dry cupping: Limited to the use of shaft and depending on the negative pressure element can be divided into two kinds of hot (warm dry cupping) and cold (cold dry cupping). In types of cold used of suction pumps, and in hot types used of flame. Depending on the number of areas and simultaneous use of oils and drugs, is named (Moving cupping) or (Drug cupping). B-wet cupping: the shafting accompanied by scratches skin and emit fluids. The most common area is in the back and between the two scapulae. C-water cupping: It is done with glasses full of warm water. D: Needle wet cupping: the shafting is accompanied by acupuncture [43].

Cupping accompanied by bleeding has been one of the oldest methods to clean the body from useless materials. In this method, the relevant organ has cleaned and evacuated from the waste materials [12]. Using the cupping therapy technique is not simple and comfortable. A glass gets in contact with skin and a vacuum created. After a few minutes, surface incisions with surgical blades created on the patient's skin. This process repeated several times. It is worth to mention that after improving wound, the scar does not remain [44]. Expressed as a hypothesis that cupping may act in a similar way as acupuncture: cupping may activate parts of the body that include neurotransmitters or the nervous system. This is a therapeutic method as an ancient therapy from complementary medicine and alternative, almost in all cultures has defined. This therapy process for many conditions such as high blood pressure, infection, pain, cardiac and psychiatric disorders has been used [45].

Leech therapy: The importance of leech in clinical therapy can be simply understood from the use of it for different therapy in thousands of years ago [46]. 1500 before Christ, in the paintings of the Pharaohs era, has mentioned to leech therapy [47].

In Talmud book, Bible holy book and other Bible versions of the Jews, signs of leech therapy can be seen [47], in the Christian era, the use of leech has become popular and it was used almost everywhere in the world. Greek doctors had been used leech for rheumatic pain therapy, Gout, types of fever and hearing loss. In addition, leech therapy is also registered in Islamic literature. For example, *Ibn-e Sina* (Avicenna) (980, 1037 ad), Specifically in his book "*Ghanoon*" has been said that leech release the blood from deep veins that cannot even be accessed through cupping [48]. Animals like leeches have active biological compounds in their secretions, especially in their saliva.

Bloody animals, especially leeches, from the beginning of human civilization, had been used for therapeutic purposes. Ancient Egyptian doctors, Indian, Greek and Arab, had used leech to treat a wide range of diseases, including sciatica pain, skin diseases, disorders of the nervous system, urinary and genital system problems, inflammation and tooth problems.

Recently, a broad study on Saliva leech has been shown that this substance contains a variety of bioactive peptides and proteins include anti-thrombin (Herodine, Bufferedin), antibodies (colin, Saratin), factor Xa inhibitors (LFA), anti-bacterial (Travesin, Thromicin) and As a result, leech known as a new therapy for many chronic disease and life threats such as various types of pains, cardiovascular problems, cancer, metastases, and infectious disease [47].

Analgesic effects of leech therapy in many studies it has been approved for patients with osteoarthritis while all have claimed to be therapy by the leech, have more improvement than using diclofenac and have fewer side effects [49].

Also, some studies have shown that hirudin in Saliva leech can be reduced synovial inflammation in arthritis patients with DING protein inhibition [50]. In another study, a group of women with osteoarthritis of the carpometacarpal joint, in a therapeutic period, had received 2-3 leeches: All people treated in this course, showed less pain and improvement in disability.

The effect of leech therapy was observed after a week of therapy and lasted for at least two months. The use of medicinal leech for treatment of some diseases in Iran has been several years old. *Hakim Jorjani* in the third book of *Zakhireye Kharazmshahi* referred to how to use leech and its therapy position [51]. Also, *Sheikh Al Rais Ibn-e-Sina* has a lot of information related to leech.

His accurate checking of leech bodybuilding and leech therapy and translation of his works into Latin causes to familiar western physician with leech therapy and the main reference of leechology in the west, have been *Ibn-e Sina's* scientific studies [12]. In Iranian traditional medicine, the use of leech was very wide and in blood and infectious diseases, blood pressure, heart attack, eye diseases, skinny, varicose veins, hemorrhoids, septic abscesses, etc., it has been used [52]. As far as it goes, based on articles inside and outside the country, some malignant cancers, such as melanoma, skin eczema, heart attack and brain strokes, blood pressure, cellulite, backache and sciatica pain, knee arthritis, hearing problems, ulcers, hematoma, neurasthenia and obsession are disease that can be threat with leech [53].

Fasd/Bloodletting/Phlebotomy: Blood exit has been done for therapeutic purposes for several thousand years and often has referred to as bleeding.

Ancient Egyptians, about 1000 BC, believed that periodically and alternate blood donations cause to maintain spirituality and increase physical strength against diseases. They encouraged people to do several Fasd/Bloodletting/Phlebotomy in per month. Also about 1500 BC, encouraging people to take private depletion for repentance of great sins [54].

Fasd or Phlebotomy is one of the methods of depletion in traditional medicine. This action cause excretion of many body poisons, especially when soda phlegm overdose and excrete waste material that sediment and increase in the blood. If the soda substance causes a backache, its treatment is through phlebotomy [4]. If the hyperemia caused a backache, the sign of that will be redness the position of pain. For the treatment of this type, phlebotomy is from the right hand if the pain is in left and if the pain is in the left hand, phlebotomy from the right. If the phlebotomy is impossible, to exit the blood it's better to have deep cupping [4].

Gamz: In the Iranian study of medical resources, the two words "*Dalk*" means rubbing and "*Gamz*" means squeezing, are the most appropriate words for massage and reflexology [55]. *Ghamz* is a special treatment in Iranian medicine, which involves squeezing the body by fingers with specific techniques and is done in various parts of the body for prevention and treatment purposes [56].

Dalk and *gamz* have been recommended in Iranian traditional medicine for the prevention and treatment of a wide range of diseases, for example: during pregnancy, the growth of children, for elderly health, athletes, the types of tiredness, types of pain, insomnia, gastrointestinal disease, a spinal column such as *ergh-o-nesa* [57,58].

Massage in Iranian medicine has a diagnostic and therapeutic aspect and *Ibn-e Sina* and others Iranian Hakims many times have mentioned this action as a "*gamz*" [12].

Hakims mentioned special useable items and special therapeutic mechanisms for *Gamz* in Iranian medicine. Also, they have mentioned the items that they prevented from doing this action that all of them is needed and essential for applying this therapy.

Hakim Arzani in *Mofarah Al-Gholoob* book describes *Gamz* like member's diffusion or distributing and with benefits [56]. *Aghily Shirazi*, Hakim of 12th century AH, also in *Kholase Al-Hekmah*, whilst pointing to the *Gamz* benefits, means it squeezing members [59]. In fact, in Iranian medicine, the *Gamz* is to squeeze members with a finger from the beginning to the end or outside the member [60,61]. It should be noted that *Gamz* or *Dalk* is a simple method to reduce pain and at the same time helping to calm down and get a good sense of care. Thought to be that soft tissue *Gamz*, causes releases endorphins and relieves pain by improving the physiological and clinical pain through physical and mental relaxation and increasing the threshold of pain [59].

Backache treatment is very acceptable with massage therapy. In oriental cultures, believed that massage as a known technique of pressure medicine, has strong analgesic effects, especially if acupuncture points apply. In the years 1998 and 1999, more than 17% of the population over the age of 18 in Canada stated that had followed alternative medical care included: spinal massage, massage therapy,

acupuncture, homeopathy, and natural therapy. The most common of these mentioned had been chronic pain, especially backache [62]. Massage is known as a therapy method without any adverse or unpleasant effects.

However, it has avoiding useable items; such as massage in an area with inflammation acute, skin infection, open fracture, burn area, deep vein thrombosis and or active cancer tumor [63]. Massage may be helpful for patients with a backache, especially when it is attending practice and instruction [64].

Currently, *Dalk* and *Gamz* education are one of the training programs of students at traditional Iranian medicine colleges. And these techniques are used to treat patients with various diseases. In recent decades, most Iranian medical universities have started to set up Iranian traditional medicine colleges with various diseases.

4. CONCLUSION

Treating with herbal medicines and manual therapy is one of the main components of complementary and alternative medicine; Also, many people with chronic Low Back Pain use medicines and remedial methods of complementary and alternative medicines to improve their diseases. As for many complications of chemical drugs, the use of medicinal herbs has been widely used for the treatment of various diseases and disorders, as a substitute for modern drugs. In Iranian traditional medicine to reduce the pain is used of plants and various treatment methods depending on the type of disease. In this review, five herbs (*Aloe vera*, *Chamomile*, *Rosemary*, *Ginger*, *Colchicum*, *Curcuma*) and four effective treatments (*Cupping*, *Leech therapy*, *Bloodletting*, *Gamz*) have been introduced for the treatment of chronic low back pain that has been used in previous researches to treat this disease.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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