Research Article

iMedPub Journals
http://www.imedpub.com/

European Journal of Experimental Biology
ISSN 2248-9215

2017
Vol.7 No.4:24

DOI: 10.21767/2248-9215.100024

5 Medicinal Plants Used in Iranian Traditional Medicine for Low Back Pain: A Quick Review

Valiollah Gerayeli Malek[1], Alireza Abbasian[1*], Mehrdad Karimi[1], Neda Khanlarkhani[2] and Soraya Parvari[3]

[1]The School of Iranian Traditional Medicine, Tehran University of Medical Sciences, Tehran, Iran

[2]The School of Medicine, Tehran University of Medical Sciences, Tehran, Iran

[3]The School of Medicine, Alborz University of Medical Science, Karaj, Iran

***Corresponding author:** Alireza Abbasian, The School of Iranian Traditional Medicine, Tehran University of Medical Sciences, Tehran, Iran, Tel: +9821 88976527; E-mail: abbasian@tums.ac.ir

Received Date: August 16, 2017; **Accepted Date:** August 26, 2017; **Published Date:** August 31, 2017

Citation: Malek VG, Abbasian A, Karimi A, Khanlarkhani N, Parvari S, et al. (2017) 5 Medicinal Plants Used in Iranian Traditional Medicine for Low Back Pain: A Quick Review. Eur Exp Biol. Vol. 7 No. 4:24.

Abstract

Low back pain (LBP) is a common disorder and a considerable economic burden in industrialized countries. A large number of patients with LBP use complementary and alternative medicine for relief of their pain. Finding effective and suitable therapy is vital for these patients, clinicians and policy makers.

Numerous herbal medications have been applied in treatment of LBP. The efficiency of these herbal medicines for the treatment of LBP is not without dispute; therefore, this review was conducted in order to evaluate the effectiveness of the five most widely used traditional therapies for the management of LBP.

Keywords: Low back pain (LBP); Herbal plants; Traditional treatments; Medications

Introduction

Low back pain (LBP) is a very common public health problem through industrialized countries. LBP is the second most common cause of physician visits and absence from work after the cold, fifth most frequent reason of hospitalization and the third major cause of surgery [1-3]. The incidence of LBP is 30 to 40 percent per year and 75 to 85 percent of people experience kind of back pain in their lifetime. LBP is the chief reason of activity limitation around the world, and imposes a great economic cost on individuals, families, communities, industry and governments [4,5].

Treatment and prevention from disability caused by back pain is possessed special importance. Therefore, adequate relief of back pain and reduce consequent disability are the most important priority treatments [6,7]. There are different ways for reducing symptoms of low back pain including: early resumption of normal physical activity (without doing the heavy lifting), pharmaceutical treatment of NSAID (Non-Steroidal Inflammatory drugs) such as piroxicam, physical therapy, support belts, and surgery [8-10].

One of the proposed treatment methods to control and treat LBP symptoms is use of traditional medicine [11]. Nowadays, in the age of new technologies and the considerable advances in science, we benefit from inclusive development in the field of traditional medicine, and herbal/ natural products. In many countries, the several herbal medicines traditionally have been used to control and treat for various types of pain along with the chemical drugs. In addition, some of these herbal kinds have been clinically verified for the relief of symptoms of LBP especially LBP caused by strains and sprains [12-14].

Aloe vera (*Aloe barbadensis* Miller)

The Aloe vera herb has been recognized for its healing, medicinal and cosmetic benefits for centuries. This plant has been applied for therapeutic properties in numerous cultures such as Greece, Egypt, India, Mexico, Japan and China [15].

The Aloe vera (botanical name: *Aloe barbadensis* miller) is a member of Asphodelaceae (Liliaceae) family, and grows generally in the dry climates of Africa, Asia, Europe and America [16].

Aloe vera as a medicinal herb is containing a number of pharmacologically-active elements useful for treatment of different disease such as radiation burns, ulcers, arthritis, and diabetes. It contains vitamins (vitamin A, C, E, and B12, that act as antioxidants), 8 enzymes (aliases, alkaline phosphatase, amylase, bradykinase, carboxypeptidase, catalase, cellulase, lipase, and peroxidase [17-19]. Bradykinase reduces excessive inflammation, and others cause sugars and fats breakdown), minerals (calcium, chromium, copper, selenium, magnesium, manganese, potassium, sodium and zinc), 12 anthraquinones (which are laxatives), and hormones (Auxins and gibberellins

that act in wound healing and have anti-inflammatory effects) [20,21].

Healing properties of aloe is related to its ingredients Glucomannan, a mannose-rich polysaccharide, and gibberellin, a growth hormone. These factors stimulate fibroblast activity and proliferation, therefore considerably raises collagen production after topical and oral use of Aloe vera. One of the other actions of Aloe is Anti-inflammation [22,23]. It decreases prostaglandin E2 production by cyclooxygenase pathway inhibition. Previous investigation has indicated that the C-glucosyl chromone as a novel anti-inflammatory compound exists in Aloe vera [24-26].

Aloe vera gel has been used dermally to decrease joint pains by tradition. Phytochemical analysis of Aloe vera revealed the existence of flavonoids, alkaloids, resins, tannins, steroids and other chemical substances [27-29].

One of the effects, which have been attributed to Aloe vera, is wounds and skin surficial traumas healing. Also, plummeting pain is seen on place of trauma after using of this remedy [30].

Studies have shown that carboxypeptidase (one of the Aloe vera ingredients) could deactivate bradykinin, which is a powerful factor causing pain during the acute inflammation. Furthermore Salicylic acid, which is found in Aloe vera, works as a painkiller, analgesic and anti-inflammatory factor by inhibiting the production of prostaglandins [31,32].

White Willow Bark (*Salix alba*)

White willow bark has been applied all over the world for its antipyretic and analgesic effects. Ancient Egyptians used this herb in order to relief pain and inflammation [33]. Willow bark has been consumed for relief of diverse kinds of pain, such as rheumatic pain, back pain, toothache, headache, and menstrual cramps. It is also applied to treat sore throat, fever and headache along with upper respiratory tract infections and influenza [33-35].

Salicin, active chemical component of Willow, was recognized in 1829 by the French pharmacist H. Leroux. In 19th century, Salicin and salicylic acid were generally used in Europe for treatment of rheumatic fever and joint pain [36]. Unlike the synthetic NSAIDs, Salicin act as a selective inhibitor of COX-2-mediated prostaglandin E2 release and prevents the release of cytokines to reduce pain.

Chrubasik et al. have evaluated effectiveness of willow (*Salix*) bark extract for the treatment of low back pain in a randomized double-blind study. They have enrolled 210 patients with an exacerbation of chronic low back pain [37,38]. The patients have been randomly assigned to receive an oral willow bark extract with either 120 mg (low dose) or 240 mg (high dose) of salicin, or placebo, with tramadol as the sole rescue medication, in a 4-week blinded trial. This research has indicated that Willow bark extract may be a useful and safe treatment for low back pain [39].

Surinjan (*Colchicum speciosum*)

Colchicum (Surinjan) is a member of the Colchicaceae plant family and over 100 species of this plant exist around the world. The main active ingredient of this herb is colchicine, a kind of alkaloid, was found to be effective in control of the pain and inflammation [40,41].

An extensively used and suggested medicine for the treatment of acute gouty arthritis flares is colchicine, an alkaloid extracted from Colchicum plant well-known to the Romans. Also Colchicum has been used for treatment of gout, joint pain, and inflammation in Iranian Traditional Medicine [42,43]. This herb contains colchicine which is a valuable drug with a narrow therapeutic range. Oral intake of colchicine has inhibited the expansion of edema in rats and has displayed anti-inflammatory characteristics.

Two preceding randomized controlled investigations have compared the result of colchicine to placebo in pain relief during acute gout flares. The precise mechanism of action of colchicine in pain relief remains uncertain [44,45]. It is recognized that colchicine binds to both a- and b-tubulin, and make a complex which inhibits microtubules formation. Thus, routes of inflammatory mediators creation that need microtubules, such as recruitment of cytosolic component (mitochondria) or proteins (kinases), are disposed to colchicine treatment.

Ginger (*Zingiber officinale*)

Ginger is a very famous spice which 80% is grown in China. Ginger has been used in traditional medicine as an anti-inflammatory agent for musculoskeletal diseases in China for more than 2,500 years. This plant contains numerous known ingredients such as gingeroles, beta-carotene, capsaicin, caffeic acid, and curcumin. Furthermore, salicylate is one of the other components which have been found in ginger [46]. It has been revealed that ginger inhibits both cyclooxygenase (COX) and lipooxygenase together, to prevent leukotriene production.

One study in 2010 has been demonstrated that daily intake of ginger led to moderate-to-large decrease in muscle pain following exercise-induced muscle injury. Their results have showed ginger's efficacy as a pain reliever [47].

Sritoomma et al. has indicated that Swedish massage with aromatic ginger oil resulted in significant reductions in pain intensity and disability through the period of valuations, representing immediate, short and long term efficiency.

Rosehip (*Rosa canina*)

The rose hip (or rose haw), as a good sources of vitamin C and polyphenols, is the false fruit of the rose plant. This herb is a medicinal plant mostly employed in folk medicine. The healthy advantages of Rose hip have been related to its extensive kind of bioactive elements such as galactolipid, galactopyranosyl glycerol (GOPO), vitamin C, phenolics, lycopene, lutein, zeaxanthin, and other carotenoids. A number of preparations from rose hip extracts were demonstrated to show *in vitro* anti-inflammatory, antioxidative, antimutagenic and

anticancerogenic activities [48]. Lipophilic elements are responsible in those mechanisms of action. This remedy has been used effectively in several investigations in patients with osteoarthritis, rheumatoid arthritis and low back pain.

Chrubasik et al. has investigated a 3-month preliminary study on the effect of rose hip and its mechanism of action on 39 patients suffering from acute low back pain [49]. They have used a human protein array system and fractions from the rose powders to evaluate their effect on cytokine expression *in vitro*, and they have showed the positive effect of this herb in reduction of pain in these patients.

Conclusion

There are many reasons for LBP, such as intervertebral discs herniation, muscle strain, ligament sprain, kidney stones, spinal stenosis, tumor, etc. Certainly, the most common cause of low back pain is sprains and strains. There are various herbs which are traditionally used for management of this type of LBP, and have been studied in technical way and validate by screening plant/plant extracts for pharmacological activity.

This review purposed to collect the pharmacological reports of herbal plant/plant extracts that are effective in LBP (caused by sprains and strains) treatment, which if validated properly and proven scientifically can act as substitute or may even replace the modern medicines. Regarding to the principle disadvantages of synthetic medicines, herbal plants as gifts from nature provides outstanding medicines for the treatment of different diseases and disorders.

In this review, five herbal plants have been highlighted which have been used in previous investigations for treatment of LBP.

Reference

1. Carey TS, Garrett J, Jackman A, McLaughlin C, Fryer J, et al. (1995) The outcomes and costs of care for acute low back pain among patients seen by primary care practitioners, chiropractors, and orthopedic surgeons. N Engl J Med 333: 913-917.
2. Goetzel RZ, D'Arco M, Thomas J, Wang D, Tabrizi MJ, et al. (2015) Measuring the Prevalence and Incidence of Low Back Pain Disorders Among American Workers in the Aerospace and Defense Industry. J Occup Environ Med 57: 998-1003.
3. Maniadakis N, Gray A (2000) The economic burden of back pain in the UK. Pain 84: 95-103.
4. Calvo-Muñoz I, Gómez-Conesa A, Sánchez-Meca J (2013) Prevalence of low back pain in children and adolescents: a meta-analysis. BMC pediatrics 13: 1.
5. Last AR, Hulbert K (2009) Chronic low back pain: evaluation and management. American family physician 79: 1067-1074.
6. Organization WHO (2002) WHO traditional medicine strategy 2002-2005.
7. Blumenthal M (1998) Therapeutic guide to herbal medicines.
8. Laudahn D, Walper A (2001) Efficacy and tolerance of Harpagophytum extract LI 174 in patients with chronic non-radicular back pain. Phytotherapy research 15: 621-624.
9. Stam C, Bonnet M, van Haselen RA (2001) The efficacy and safety of a homeopathic gel in the treatment of acute low back pain: a multi-centre, randomised, double-blind comparative clinical trial. Br Homeopath J 90: 21-28.
10. Surjushe A, Vasani R, Saple DG (2008) Aloe vera: a short review. Indian J Dermatol 53: 163-166.
11. Marshall JM (1990) Aloe vera gel: what is the evidence. Pharm J 244: 360-362.
12. Heggie S, Bryant GP, Tripcony L, Keller J, Rose P, et al. (2002) A phase III study on the efficacy of topical aloe vera gel on irradiated breast tissue. Cancer nurs 25: 442-451.
13. Joseph B, Raj SJ (2010) Pharmacognostic and phytochemical properties of Aloe vera Linn—An overview. Int J Pharm Sci Rev Res 4: 106-110.
14. Rajasekaran S, Sivagnanam K, Subramanian S (2005) Antioxidant effect of Aloe vera gel extract in streptozotocin-induced diabetes in rats. Pharmacol Rep 57: 90-96.
15. Chithra P, Sajithlal G, Chandrakasan G (1998) Influence of Aloe vera on collagen characteristics in healing dermal wounds in rats. Mol Cell Biochem 181: 71-76.
16. Hutter JA, Salman M, Stavinoha WB, Satsangi N, Williams RF, et al. (1996) Antiinflammatory C-glucosyl chromone from Aloe barbadensis. J Nat Prod 59: 541-543.
17. Guha P, Paul S, Das A, Halder B, Bhattacharjee S, et al. (2015) Analyses of human and rat clinical parameters in rheumatoid arthritis raise the possibility of use of crude Aloe vera gel in disease amelioration. Immunome Research.
18. Hashemi SA, Madani SA, Abediankenari S (2015) The review on properties of Aloe vera in healing of cutaneous wounds. BioMed research international.
19. Eshghi F, Hosseinimehr SJ, Rahmani N, Khademloo M, Norozi MS, et al. (2010) Effects of Aloe vera cream on posthemorrhoidectomy pain and wound healing: results of a randomized, blind, placebo-control study. J Altern Complement Med 16: 647-650.
20. Shahzad MN, Ahmed N (2013) Effectiveness of Aloe vera gel compared with 1% silver sulphadiazine cream as burn wound dressing in second degree burns. J Pak Med Assoc 63: 225-230.
21. Highfield ES, Kemper KJ (1999) White Willow Bark (Salix alba). Long Wood Herbal Task Force.
22. Hedner T, Everts B (1998) The early clinical history of salicylates in rheumatology and pain. Clin Rheumatol 17: 17-25.
23. Chrubasik S, Künzel O, Model A, Conradt C, Black A (2001) Treatment of low back pain with a herbal or synthetic anti-

rheumatic: a randomized controlled study. Willow bark extract for low back pain. Rheumatology 40: 1388-1393.

24. Chrubasik S, Eisenberg E, Balan E, Weinberger T, Luzzati R, et al. (2000) Treatment of low back pain exacerbations with willow bark extract: a randomized double-blind study. Am J Med 109: 9-14.
25. Javed M, Khan JA, Siddiqui M (2005) Effect of Colchicum luteum Baker in the management of rheumatoid arthritis. Indian J Tradit Know 4: 421-423.
26. Ziaei A, Sahranavard S, Faizi M (2016) Topical herbal remedies for treatment of joint pain according to Iranian Traditional Medicine. Research Journal of Pharmacognosy 3: 63-72.
27. Chang YH (1975) Mechanism of action of colchicine. III. Antiinflammatory effects of colchicine compared with phenylbutazone and indomethacin. Arthritis Rheum 18: 493-496.
28. Terkeltaub RA, Furst DE, Bennett K, Kook KA, Crockett R, et al. (2010) High versus low dosing of oral colchicine for early acute gout flare: Twenty-four–hour outcome of the first multicenter, randomized, double-blind, placebo-controlled, parallel-group, dose-comparison colchicine study. Arthritis Rheum 62: 1060-1068.
29. Ahern M, Reid C, Gordon T, McC redle M, Brooks P, et al. (1987) Does colchicine work? The results of the first controlled study in acute gout. Aust N Z J Med 17: 301-304.
30. Ramonda R, Oliviero F, Galozzi P, Frallonardo P, Lorenzin M, et al. (2015) Molecular mechanisms of pain in crystal-induced arthritis. Best Pract Res Clin Rheumato 29: 98-110.
31. Langner E, Greifenberg S, Gruenwald J (1998) Ginger: history and use. Adv Ther 15: 25-44.
32. Awang D (1992) Ginger. Can Pharm J 125: 309-311.
33. Swain AR, Dutton SP, Truswell AS (1985) Salicylates in foods. See comment in PubMed Commons below J Am Diet Assoc 85: 950-960.
34. Utpalendu J, Chattopadhyay RN, Badri PS (1999) Preliminary studies on anti-inflammatory activity of Zingiber officinale Rosc., Vitex negundo Linn and Tinospora cordifolia (willid) Miers in albino rats. Indian journal of pharmacology 31: 232.
35. Srivastava K, Mustafa T (1992) Ginger (Zingiber officinale) in rheumatism and musculoskeletal disorders. Medical hypotheses 39: 342-348.
36. Bliddal H, Rosetzsky A, Schlichting P, Weidner M, Andersen L, et al. (2000) A randomized, placebo-controlled, cross-over study of ginger extracts and ibuprofen in osteoarthritis. Osteoarthritis Cartilage 8: 9-12.
37. Black CD, Herring MP, Hurley DJ, O'Connor PJ (2010) Ginger (Zingiber officinale) reduces muscle pain caused by eccentric exercise. J Pain 11: 894-903.
38. Sritoomma N, Moyle W, Cooke M, O'Dwyer S (2014) The effectiveness of Swedish massage with aromatic ginger oil in treating chronic low back pain in older adults: a randomized controlled trial. Complement Ther Med 22: 26-33.
39. Chrubasik JE, Roufogalis BD, Chrubasik S (2007) Evidence of effectiveness of herbal antiinflammatory drugs in the treatment of painful osteoarthritis and chronic low back pain. Phytother Res 21: 675-683.
40. Chrubasik C, Wiesner L, Black A, Müller-Ladner U, Chrubasik S (2008) A one-year survey on the use of a powder from Rosa canina lito in acute exacerbations of chronic pain. Phytother Res 22: 1141-1148.
41. Fan C, Pacier C, Martirosyan DM (2014) Rose hip (Rosa canina L): A functional food perspective. Functional Foods in Health and Disease 4: 493-509.
42. Larsen E, Kharazmi A, Christensen LP, Christensen SB (2003) An Antiinflammatory Galactolipid from Rose Hip (Rosa c anina) that Inhibits Chemotaxis of Human Peripheral Blood Neutrophils in Vitro. J Nat Prod 66: 994-995.
43. Lattanzio F, Greco E, Carretta D, Cervellati R, Govoni P, et al. (2011) In vivo anti-inflammatory effect of Rosa canina L. extract. J Ethnopharmacol 137: 880-885.
44. Håkansson Å, Stene C, Mihaescu A, Molin G, Ahrné S, et al. (2006) Rose hip and Lactobacillus plantarum DSM 9843 reduce ischemia/reperfusion injury in the mouse colon. Dig Dis Sci 51: 2094-2101.
45. Trovato A, Monforte M, Rossitto A, Forestieri A (1996) In vitro cytotoxic effect of some medicinal plants containing flavonoids. Bollettino chimico farmaceutico 135: 263-266.
46. Christensen R, Bartels E, Altman RD, Astrup A, Bliddal H (2008) Does the hip powder of Rosa canina (rosehip) reduce pain in osteoarthritis patients?–a meta-analysis of randomized controlled trials. Osteoarthritis Cartilage 16: 965-972.
47. Winther K (2014) Low-dose seed and shell powder from rose-hip (Rosa canina) can aleviate symptoms of osteoarthritis and reduce c-reactive protein in patients suffering from osteoarthritis. Osteoarthritis Cartilage 22: S321-S322.
48. Kirkeskov B, Christensen R, Bügel S, Bliddal H, Danneskiold-Samsøe B, et al. (2011) The effects of rose hip (Rosa canina) on plasma antioxidative activity and C-reactive protein in patients with rheumatoid arthritis and normal controls: a prospective cohort study. Phytomedicine 18: 953-958.
49. Chrubasik-Hausmann S, Chrubasik C, Neumann E, Müller-Ladner U (2014) A pilot study on the effectiveness of a rose hip shell powder in patients suffering from chronic musculoskeletal pain. Phytotherapy Research 28: 1720-1726.