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Herbs Used As a Cure For Rheumatoid Arthritis : A Review

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ABSTRACT

Rheumatoid arthritis is chronic, progressive, disabling autoimmune disease characterized by systemic inflammation of joints, damaging cartilage and bone around the joints. It is a systemic disease which means that it can affect the whole body and internal organs such as lungs, heart and eyes. Although numbers of synthetic drugs are being used as standard treatment for rheumatoid arthritis but they have adverse effect that can compromise the therapeutic treatment. Unfortunately, there is still no effective known medicinal treatment that cures rheumatoid arthritis as the modern medicine can only treat the symptoms of this disease that means to relieve pain and inflammation of joints. It is possible to use the herbs and plants in various forms in order to relieve the pain and inflammation in the joints. There are so many medicinal plants that have shown anti rheumatoid arthritis properties. So the plants and plant product with significant advantages are used for the treatment of rheumatoid arthritis. The present review is focused on the medicinal plants having anti rheumatoid arthritis activity which are widely used in regular life in India.

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Introduction

Rheumatoid arthritis is a systemic disease and it involve rheumatoid nodules, vacuities, eye inflammation, cardio pulmonary disease are manifestation of the disease. Rheumatoid arthritis is not an inherited disease. Researchers believe that some people have genes that make them susceptible to the disease. People with these genes will not automatically develop rheumatoid arthritis. There is usually a "trigger," such as an infection or environmental factor, which activates the genes. When the body is exposed to this trigger, the immune system

responds inappropriately. Instead of protecting the joint, the immune system begins to produce substances that attack the joint. This is what may lead to the development of rheumatoid arthritis. It is autoimmune disease which means the body's immune system mistakenly attack on healthy tissues. The normal joint lining is very thin and it has very few blood vessels in it but in the rheumatoid arthritis joints the lining is very thick and crowded with the white blood cells. The white blood cells secrete chemical substances like interleukin-1 (IL-1) and tumor necrosis factor alpha (TNF-alpha) that produce pain, joint swelling and joint damage.[1]

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Before the discovery of synthetic drugs man was completely depends on the medicinal plants for the treatment of disease. The medicinal value of plants has been recognized by every person of this society. In the nineteenth or earlier centuries natural product extracts, particularly those derived from botanical species, provided the main source of folk medicines. However, in the latter part of the nineteenth century, biologically-active organic molecules began to be isolated in relatively pure form for medicinal use. For example, salicylic acid, the precursor of aspirin, was isolated in 1874 from willow bark. There are numerous other examples.

There are many synthetic drugs that are being used as standard treatment for rheumatoid arthritis but they have adverse effect that can compromise the therapeutic treatment so these adverse effects increase the chances for the use of herbal plants for the rheumatoid arthritis treatment. The present review is the medicinal plants that are used in the treatment of rheumatoid arthritis.[2]

1. Aloe:

Botanical Name: Aloe barbadensis

Other Name: Curacao aloe, Lily of the desert

Family: Liliaceae

Aloe barbadensis is cultivated in Europe and in many parts of India, including north-west Himalayan region. Aloe has been one of the most important plants used in folk medicine. Anthraquinone, anthracene, cinnamic acid and anthranilic acid are found in the aloe plants that are responsible for its activities. It has also antibacterial and antifungal properties, used as blood purifier, anti-inflammatory, diuretic, uterine tonic, spermatogenic, laxative, and purgative and fever reliever. Aloe stimulates the immune system and it is a powerful anti-inflammatory agent. Topical application of aloe extract result in the reduction of inflammation and arthritis in adjuvant induced arthritis in Sprague Dawley rats.[3- 5]



Figure. 1 Aloe

2. Shallaki:

Botanical Name: Boswellia serrata Linn.

Other Name: Boswellia; Indian Frankincense

Family: Burseraceae

Boswellia serrata Linn. is a moderate to large branching tree found in India. In India it is found in Bihar, Madhya Pradesh and Gujarat. Strips of boswellia bark are peeled away; yielding gummy-oleo resins having inflammatory, anti-atherosclerotic and anti-arthritic activities. Extract of this gummy oleo resins have also been used as astringent, stimulant, and expectorant, anti-septic, anti-atherosclerotic, analgesic and sedative. It is also known to regain integrity of the vessel in the joints from damage or spasm. Extract of Boswellia serrate have natural anti-inflammatory activities at sites where chronic inflammation is present by switching off pro-inflammatory cytokines and mediators which initiates the process. Non steroidal anti inflammatory drugs can cause a breakdown of glycosaminoglycan synthesis which can accelerate the articular damage in arthritic conditions where as Boswellia serrata reduces the breakdown of glycosaminoglycan synthesis.[6]



Figure. 2 Shallaki

3. Ginger:

Botanical Name: Zingiber officinale

Other Name: Ginger root

Family: Zingiberaceae

Ginger is one of the most useful herbal supplements. It is native of South East Asia, but it is cultivated in Caribbean island, Africa, Australia, Mauritius, Taiwan and India. More than 30 % production is in India. Ginger consists of volatile oil, starch, fat, fiber, inorganic material, and residual matter. Ginger oil contains monoterpene, hydrocarbons, sesquiterpene hydrocarbons, oxygenated mono- and sesquiterpene. Ginger is used as an aromatic, a carminative, flavoring agent. It is used to treat nausea, vomiting, diarrhea. It is also used as antioxidant, anti-inflammatory, antiseptic, anticarcinogenic, antifungal, and anti-microbial. Ginger extract is one of the effective arthritis joint pain remedies recommended by physicians. Main constituents are sesquiterpenoids, with (-) zingiberene. Sesquiterpene Lactones are natural

products responsible for anti-inflammatory activity. [7, 8]



Figure. 3 Ginger

4. Bastard guelder:

Botanical Name: *Premna corymbosa* Rottl.

Other Name: Buas Buas

Family: Verbenaceae

Premna corymbosa Rottl., is a small size tree or long shrub. The plant is widely distributed throughout the India. All the parts of the plant are useful. The roots are astringent, bitter, acrid, sweet, thermogenic, anti inflammatory, alexeteric, cardiotoxic, alternant, expectorant, depurative digestive, carminative, stomachic, laxative, febrifuge, antibacterial and tonic. The leaves are stomachic, carminative, galactagogue and they are useful in dyspepsia, colic flatulence, agalactia, cough, fever, rheumatism, neuralgia, hemorrhoids and tumors. Upon long term treatment with *Premna corymbosa* ,it significantly suppressed the development of chronic arthritis induced by Complete Freund's Adjuvant.[9-10]



Figure. 4 Guelder

5. Night jasmine:

Botanical Name: *Nyctanthes arbortristis* Linn.

Other name: Coral Jasmine

Family: Oleaceae

Nyctanthes arbortristis is a shrub or a small tree It is used as laxative, diuretic, diaphoretic, used to expel

roundworm and threadworm in children's, to relieve cough, also used for the treatment of rheumatoid arthritis. The leaves of *Nyctanthes arbortristis* inhibited the acute inflammatory edema produced by different phlogistic agents, viz. carrageenin, formalin, histamine, 5-hydroxytryptamine and hyaluronidase in the hind paw of rats(Ref. needed). Acute and chronic phases of formaldehyde induced arthritis are significantly inhibited (Ref needed). *Nyctanthes arbortristis* Linn, also found to inhibit the inflammation produced by immunological methods, reund's adjuvant arthritis.[11-12]



Figure. 5 Night Jasmine

6. Indian sarsaparilla:

Botanical Name: *Hemidismus indicus* Linn.

Other name: Anantamul, Pseudosarsa

Family: Asclepiadaceae

Hemidismus indicus Linn. is a species of plant that is found in South Asia. It contains coumarin, essential oil, starch, tannic acid, triterpenoid saponin. It is used in the treatment of rheumatoid arthritis, nephritic complaints, chronic skin disease, chronic ulcer, and blood purifier. The ethanolic extract of *Hemidismus indicus* reducing the paw volume and paw thickness more than Diclofenac sodium.[13]



Figure. 6 Sarsaparilla

7. Aginbuti:

Botanical Name: *Ammania baccifera* Linn.

Other name: Acrid weed, Monarch red stem,

Tooth cup

Family: Lythraceae

Ammania baccifera Linn. is a glabrous, erect branching herb, found as weed in rice-fields and marshy localities throughout India. It contains sterols, glycosides, alkaloids, triterpenoid and saponin. Plants have hypothermic, hypertensive, anti urolithiasis, antibacterial, seminal weakness, and fever, flatulence and CNS depressant activities. The aerial parts of *Ammania baccifera* Linn. posses significant anti-inflammatory and anti arthritic activity in rats (Ref. needed). Ethanolic extract inhibit of inflammation in Cotton pallet granuloma test and Adjuvant arthritis model.[14]



Figure. 7 Aginbuti

8. Chhota halkusa :

Botanical Name: *Leucas aspera* Linn.

Other name: Gophaa, Tumba, Dronapushpi

Family: Lamiaceae

Leucas aspera Linn. is a small erect, branched annual herb. It is distributed throughout India from the Himalayas down to Ceylon. The plant is used traditionally as an antipyretic and insecticide. Medicinally, it has been proven to possess various pharmacological activities like antifungal, antioxidant, antimicrobial, antinociceptive and cytotoxic activity. It contains triterpenoids, oleanolic acid, ursolic acid and b-sitosterol, nicotine, sterols, glucoside, diterpenes and phenolic compounds. Ethanolic extract of *Leucas aspera* Show anti rheumatoid arthritis effect in Complete Freund's adjuvant induce arthritis.[15-16]



Figure. 8 Chhota

9. Crocus:

Botanical Name: *Crocus sativus* Linn

Other Name: Saffron

Family: Iridaceae

Crocus sativus is used widely in tropical and sub tropical countries for a variety of purposes in both house hold and for medicinal purposes.the stigmas of the plant contains a varity of chemical constituents like the crocetin, crocin and other flavanoids which make them suitable to posses diversified medicinal properties for treating various ailments countries like india saffron is been used in their traditional medicine from the pre-historicages. It is considered as a tonic for heart and nervous system and for smoothing menstruation and also posses anti rheumatic property.[17]



Figure. 9 Saffron

10. Camphor:

Botanical Name: *Cinnamomum Camphora*
Other Name: Camphor Tree, Gum Camphor, Camphor Laurel, French Camphor, Howood
Family Name: Lauraceae

Camphor is used as anti-bacterial, anti-fungal, analgesic, analeptic, anthelmintic, antispasmodic, aromatic, aphrodisiac, carminative, diaphoretic, sedative, stimulant, narcotic and tonic. It is used as nervine depressant in case of hysteria, epilepsy, chorea and convulsions. It acts as stimulant for cardiac, circulation and respiration. It is used to treat arthritis since olden days. Anti arthritic activity of the plant have been proved clinically.[18]



Figure. 10 Camphor

11. Mango:

Botanical Name: *Mangifera indica* Linn
Other Name: mamidi, manga
Family: Anacardiaceae

Mangifera indica Linn., a species of mango. It is now cultivated throughout the tropical and subtropical world for commercial fruit production. Mangiferin is extracted from mango at high concentrations from the young leaves, bark and from old leaves. Mangiferin shows strong antioxidant effect. It has a number of pharmacological actions. The methanolic extract of *Mangifera indica* possesses the anti-inflammatory activity shown in the arthritic parameter like arthritic index, paw edema and rheumatoid factor.[19]



Figure. 11 Mango

12. Mint:

Botanical name: *Mentha arvensis* Linn
Other names: pudina, podina
Family: Lamiaceae

Anti-inflammatory and anti-arthritic activity of methanolic leaf extracts of *Mentha arvensis* Linn in arthritis induced male albino rats. It is estimated for assessing the anti-inflammatory and anti-arthritic activity of methanolic extract of *Mentha arvensis*. Their investigation concludes that the methanolic extract of *Mentha arvensis* possesses a significant anti-inflammatory and anti-arthritic activity.[20]



Figure. 12 Mint

13. Ashwagandha:

Botanical Name: *Withania somnifera* Linn.
Other Name: Winter cherry, withania root
Family: Solanaceae

Ashwagandha also known as Indian ginseng, is an important ancient plant. The roots of Ashwagandha have been employed in Indian traditional systems of medicine, Ayurveda and Unani. The pharmacological activity of the root is attributed to the alkaloids and steroidal lactones. Among the alkaloids, withanine, pseudo-withanine, tropine, pseudo-tropine, somniferine, somnine are mainly present. Oral administration of *Withania somnifera* Linn. root powder showed the anti-arthritic effect in adjuvant induced arthritic rats.[21]



Figure. 13 Ashwagandha

14. Turmeric:

Botanical name: *Curcuma longa* Linn.

Other Name: Turmeric root, Indian saffron Plant

Family: Zingiberaceae

Turmeric is cultivated for its rhizome in India, China, Shrilanka, Indonesia, Jamaica, and Peru. Turmeric contains volatile oil, resins, starch grains and yellow color substances known as curcuminoids. The chief component of curcuminoids is known as curcumin. Curcumin, a natural compound present in the rhizomes of plant *Curcuma longa*, demonstrated its anti inflammatory action. It is used in wound healing, hepatoprotection and neuroprotection etc. It has antimutagenic, antispasmodic, antimicrobial and anticancer activities. Daily ip administration of the low dose of purified curcuminoids (4 mg total curcuminoids/kg/d) inhibited joint inflammation in both the acute and chronic phases of arthritis.[22]



Figure. 14 Turmeric

15. Black pepper

Botanical Name: *Piper nigrum* Linn.

Other Name: Pepper

Family: Piperaceae

Black pepper is indigenous and cultivated in South India. It is also cultivated in Indonesia, Brazil, Malaysia and Shrilanka. India ranks first in the cultivation of this drug. Pepper contains an alkaloid piperine, volatile oil, pungent resins, piperidine and starch. It is used as a aromatic, stimulant, stomachic and carminative. It increases the secretion of gastric juices. It also increases the bio-availability of certain drugs. Piperine isolated from black pepper. Piperine administered orally at a dose of 20 and 100 mg/kg/day for eight days cause decrease in the arthritic symptoms in carrageenin induced acute paw arthritis.[23]



Figure. 15 Black Pepper

Conclusion

Indian sub-continent is a rich source of plant & animal wealth which is due to its varied geographical and agro climate regions. It is a well known fact that traditional system of medicines always played important role in meeting the global health care needs. Arthritis is one of the most common auto-immune inflammatory disorders, foremost cause of disability in western and developing countries. The presently available synthetic drugs in the market are not only economical exploitation but also associated with adverse effects. The synthetic drugs which are used for the arthritis treatment shows the side effects like stomach ulcers, GIT bleeding, kidney, liver damage and hypertension. The herbs having the medicinal activity provide active principles, having no or minimum side effects and may be useful for arthritis control.

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