

## SOME TRADITIONALLY USED ANTI-ARTHRITIC HERBS A REVIEW

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## ABSTRACT

Arthritis is one of the major problems in older age. There are about as many herbal remedies for arthritis as there are arthritis sufferers. Most work by improving the circulation, and encourage fluid elimination. Inflammation due arthritis is mediated through many primary and secondary mediators. Interleukins and TNF- $\alpha$  are one of these mediators. Anti-inflammatory agents are used in arthritis widely. In this concern use of many herbal medicines also explored. Now a day's world population moves towards herbal remedies for treatment of such ailments. The numbers of plants have been screened for their anti-inflammatory and anti-arthritis activity, but only few of them reached up to the clinical level. Traditional healers have much type of remedies for treatment of arthritis.

**Keywords** Arthritis, Antinociceptive activity, Inflammation, Herbal.

## INTRODUCTION

Medicinal plants are of great importance to the health of individual and communities. The medicinal value of these plants lies in some chemical active substances that produce a definite physiological action on the human body. The most important of these chemically active (bioactive) constituents of plants are alkaloids, tannins, flavonoids and phenolic compounds. Many of these indigenous medicinal plants are also used for medicinal purposes. Inflammatory diseases like rheumatic diseases are very common throughout the world.<sup>1</sup> Rheumatoid Arthritis is a systemic disease that affects many joints in the body, and is one of the most common forms of arthritis? It is characterized by the inflammation of the membrane lining the joint, which causes pain, stiffness, warmth, redness and swelling.<sup>2,3</sup> The inflamed joint lining, the synovium, can invade and damage bone and cartilage. Pathophysiology of exaggerated synovial tissue involves hyperplasia and subintimal infiltration of T and B lymphocytes, this result in pannus tissue that irreversibly destroys the cartilage and bone in the affected joint. Polymorphonuclear leukocytes and macrophages are also stimulated, which results in the production of inflammatory mediators including large amount of superoxide and hydrogen peroxide that can cause significant impairment and destruction of synovial fluid, cartilage and other articular constituents.<sup>4,5</sup> Approximately 1-2% adult population worldwide suffering from rheumatoid arthritis.<sup>6,7</sup> Women are more prone to rheumatoid arthritis in comparison to man. The disease affects systemically many extra-articular tissues, includes skin, blood vessels, heart, lungs and muscles. Drug therapy for rheumatoid arthritis is based on two principal approaches, symptomatic treatment with non-steroidal anti-inflammatory drugs and disease-modifying antirheumatic drugs. Currently available most of drugs are directed towards the pain control or inflammation of synovial joints, but have lesser effect on immune-inflammatory pathway and consequently little blockade of disease progress. In fact, herbal plants is being used widely as medicine around decades for treatment of arthritic disease.<sup>8,9</sup> Herbal medicine constitute important resources for the treatment of various ailments.

***Cissampelos pareira***

Aqueous ethanolic extract of *Cissampelos pareira* (Menispermaceae) roots (*C. pareira*) at the dose levels of 100–400 mg/kg, once daily for 3 days exhibited significant ( $P < 0.001$ ) resistance against mechanical pain after 30 min in analgesymeter induced pain in mice. In acetic acid (0.6%; i.p.) inducing writhing, *Cissampelos pareira* significantly ( $P < 0.05$ ) decreased the writhing episodes; the degree of percent protection at 200 and 400 mg/kg was

22.73 and 51.63. Further *Cissampelos pareira* showed the dose dependent significant protective effect against complete Freund's adjuvant induced arthritis. The percentage protection on the 18th day was 40.54 ( $P < 0.01$ ) and 71.52 ( $P < 0.001$ ) at 200 and 400 mg/kg respectively. Lysosomal enzymes (acid phosphatase and *N*-acetyl glucosaminidase) were decreased by 50% in stomach homogenate with respect to arthritic group. The increased pain threshold and protective effect against CFE by *Cissampelos pareira* vindicated its medicinal value in treatment of pain and arthritis.<sup>10</sup>

***Strychnos potatorum***

*Strychnos potatorum* Linn (Loganiaceae) is a moderate sized tree found in southern and central parts of India, the effect of the aqueous extract (SPE) and the whole seed powder (SPP) of *Strychnos potatorum* Linn seeds at the dose of 200 mg/kg showed significant reduction in rat paw edema volume when compared with the arthritic group. The values of blood urea and serum creatinine in adjuvant induced arthritic rats when compared significantly reduced by treatment with SPP, SPE and Diclofenac sodium. Fibrinogen and ceruloplasmin are regarded as acute phase proteins. In arthritis-induced rats, these two acute phase markers were significantly ( $p < 0.001$ ) increased. Treatment with SPP and SPE have significantly ( $p < 0.001$ ) decreased the levels of acute phase proteins in arthritic rats. treatment with SPP and SPE could significantly increase the albumin and decreased the globulin level in arthritic rats which indicates that SPP and SPE might have a suppressive action on the mediators of inflammation.<sup>11</sup>

***Aristolochia bracteata***

*Aristolochia bracteata* is most commonly known as kidamari, widely distributed in India. *A. bracteata* extracts improves ESR, Hb value and also restores body weight. Significant ( $P < 0.01$ ) inhibitory effect was observed with *A. bracteata* extract on Freund's complete adjuvant induced paw edema ( $P < 0.001$ ). The latency to thermal stimuli and inhibitory effect on xylene induced ear edema was significantly ( $P < 0.05$ ) affected by oral treatment of *A. bracteata*, irrespective of solvent used for extraction. Treatment of FCA induced rats with *A. bracteata* extracts shown ( $P < 0.05$ ) increase in pain threshold, weight bearing ability, ambulation and also decline in scratching, defecation and urination, were observed as a sign of improvement in behavioural condition. The potent anti-arthritis effect of *Aristolochia bracteata* extract may be through maintenance of synovial membrane and vascular permeability, thereby inhibiting cytokines and leukotriene infiltration inhibition as evidenced in paw edema volume and xylene-induced ear edema.<sup>12</sup>

**Cleome rutidosperma**

*Cleome rutidosperma* (Capparidaceae) whole plant extract was used in dose 200 mg/kg. The ethanolic extract shows more potent activity in chronic cotton pellet granuloma model, oral administration of 200 mg/kg of the ethanolic extract produced 48% inhibition of granuloma as compared to standard Prednisolone (5mg/kg) which produced 58% inhibition of granuloma. Oral administration of 200 mg/kg of ethanolic extract inhibited Freund's adjuvant induced rat paw oedema by 44% after 21 days where as Prednisolone (5 mg/kg) inhibited rat paw oedema by 59% after 21 days.<sup>13</sup>

**Saussurea lappa**

*Saussurea lappa* Clarke (Compositae), commonly known as Kushta in Sanskrit, is a tall robust perennial herb distributed in Kashmir. The hot water extract of the roots has been traditionally used for inflammations and rheumatism.<sup>14,15</sup> The presence of alkaloids, carbohydrates, flavonoids, glycosides, phenolic compounds, saponins and tannins. Application of all the three extracts exhibited significant ( $p < 0.01$ ) edema inhibition when compared with the arthritic control group. Extract treated groups shown approx 66%, 57%, 42% inhibition compared to standard 65% and control respectively. *Saussurea lappa* root extracts are endowed with effective antiarthritic activity. These findings seem to justify the use of the plant in traditional Indian medicine in the treatment of inflammation, including arthritic conditions.<sup>16</sup>

**Tinospora cordifolia**

*Tinospora cordifolia* (TC) family Menispermaceae is distributed throughout tropical Indian subcontinent, ascending to an altitude of 300 m. *T. cordifolia* is widely used in folkloric veterinary medicine and traditional ayurvedic medicine in India for its anti-inflammatory and anti-arthritic activities.<sup>17,18</sup> At dose of 150 mg/kg *T. cordifolia* significant reduction in paw volume, as well as serum copper and CRP level. The level of Hb and RBC counts increased significantly with dose where as there was reduction in ESR and WBC counts. The anti-oxidant properties of *Tinospora cordifolia* and its ability to block the COX-2, inhibit platelet aggregation pathway during the progression of inflammation justify the usage of *Tinospora* extract in the treatment of rheumatoid arthritis.<sup>19</sup>

**Vernonia anthelmintica**

Antiarthritic activity of ethanolic extract of seeds of *Vernonia anthelmintica*. EVA (250 & 750 mg/kg) and EVA (500 mg/kg) produced significant ( $p < 0.05$  &  $p < 0.01$  respectively) inhibition of paw edema from 1 to 6 h as compared to carrageenan control, but the effect was not dose-dependent. Diclofenac (10 mg/kg, i.p.) produced significant ( $p < 0.01$ ) anti-inflammatory effect at 1 to 6 h as compared to carrageenan control. In FCA treatment with EVA 250 mg/kg showed significant ( $p < 0.01$ ) prevention of the paw edema on 28th day, whereas the treatment with EVA 500 mg/kg showed significant ( $p < 0.01$ ) prevention in the paw edema during 21st & 28th day as compared to the arthritis control. In xylene induced edema treatment with EVA (250, 500 & 750 mg/kg) showed significant ( $p < 0.01$ ) decrease in ear thickness as compared to control during the 30 to 60 min. Dexamethasone (1 mg/kg, i.p.) showed significant ( $p < 0.05$  &  $p < 0.01$ ) decrease in ear thickness as compared to the control group at 15 min and during 30 to 60 min.<sup>20</sup>

**Borassus flabellifer**

*Borassus flabellifer* L. (Arecaceae) is a tall palm found in hotter parts of India, wild as well as cultivated in most parts of India The extract at doses 200mg/kg b.w. and 400mg/kg b.w. and diclofenac sodium (standard) at 100mg/kg b.w. showed significant anti-inflammatory and antiarthritic activity, as compared to control ( $p < 0.0001$ ). The extract and standard drug also showed significant ( $p < 0.0001$ ) results for haematological and biochemical parameters. The mean change in paw swelling was about  $1.90 \pm 0.02$  in the FCA induced control group on 21<sup>st</sup> day. *Borassus flabellifer* significantly

( $P < 0.0001$ ) reduced the mean change in paw swelling at 21<sup>st</sup> day evaluation and was found to be  $1.48 \pm 0.01$  and  $1.42 \pm 0.00$  in a dose dependent manner at 200 and 400 mg/kg b.w. respectively. However, the standard drug diclofenac sodium exhibited significant ( $1.32 \pm 0.02$ ,  $P < 0.0001$ ) protection as compared with the control group. The results confirm the use of *Borassus flabellifer* L. traditionally for the treatment of painful inflammatory conditions and in arthritic pain.<sup>21</sup>

**CONCLUSION**

Following article reviews that studies with new active principles derived from botanical source, used as anti-arthritic in novel and effective way of treatment. Arthritis is an most threatening disease worldwide, so these plants play efficient role. The plants provide essential compounds with active principles, having minimal side effects, proven to be useful for arthritis control.

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**Some Commonly Used Anti-arthritis Herbs**

S.No.	Botanical Name	Local Name	Part used
1	<i>Achillea millefolium</i>	Bloodwort	Whole plant
2	<i>Zingiber officinale</i>	Ginger	Rhizome
3	<i>Bacopa monnieri</i>	brahmi	Whole plant
4	<i>Withania somenifera</i>	Ashwagandha	Root
5	<i>Boswellia serrata</i>	Salai guggul	Gum resin
6	<i>Curcuma longa</i>	Turmeric	Rhizome
7	<i>Emblica officinalis</i>	Amla	Fruit
8	<i>Aegle marmelos</i>	Bilva	fruit
9	<i>Ocimum sanctum</i>	Basil	Leaves
10	<i>Centella asiatica</i>	Gotu kola	Stem
11	<i>Bauhinia racemosa</i>	Kachnal	Bark
12	<i>Eclipta prostrata</i>	Bhringaraj	Root, leaves