Anti-Arthritic Activity Of Ethano-Medicinal Herbal Plants

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Abstract: The rich and diversified flora of India provides valuable storehouse of medicinal plants. The curative properties of herbs have long been known and are documented in ancient manuscripts. The plant wealth of India also offers the people who tend live stock, a rich reservoir in treating the arthritis disease. Plants offer a cheap and alternative remedy to the people for treatment of arthritis. This study records indigenous medicinal plant utilization in treating arthritis. The paper deals with 37 genera belonging to 23 families used in arthritis practices by rural people. Ethno medicines are very cheap and have symptomatic curing which depends on person to person and their requirement. The purpose of the present study was to document the survey of the plant based human health care practitioners.

Key Words: Arthritis, ethno botany, Medicinal Plants.

I. INTRODUCTION

Arthritis is an auto immune disorder characterized by pain, swelling and stiffness. Its prevalence depends upon age. It is an inflammation of synovial joint due to immuno-mediated response. Today’s life style of the human being are improper diet, lack of regular exercise and wrong posture and long working hours, use of laptops and desktops resulting the diseases Arthritis & Rheumatoid arthritis. Our traditional folklore healer cure it with herbal plant drugs. 100 forms of arthritis are recognized by medical practitioners. Human being have long history of medicinal plants for curing various ailments (Hill, 1989).

About 60-70% Population of developing worlds mainly depends on traditional medicinal system in other word complementary or alternative or folk medicine (Lal & Yadav 1983). Indigenous peoples used plants for their traditional medicinal systems are the main sources of new important pharmaceuticals (Balick and Cox 1996). Knowledge about traditional medicinal plants and their data are the rich source for the new researcher in model scientific age. The plant drugs are confirmed by different research work and pharmacological studies. Medicinal plants are used to treat illness and diseases for thousands of years. They have gained economical importance because of their application in pharmaceutical, cosmetic, perfumery and food industries. The interest in herbal systems of medicine is growing day-by-day because nature can cure many diseases. Plants as medicine very common in China, Japan, Mexico and India. Medicinal plants are used in treatment of various diseases. Asparagus racemosus, Withania somnifera, Glycerrhiza glabra, Piper longum, Adathoda vasica, Zingiber officinale, Terminalia chebula, Phyllanthus emblica, Ricinus communis etc., are used in Arthritis (Rehman et al 2011).

II. MATERIALS AND METHODS:-

The study is based on the field survey and published literature on medicinal plant of Raipur. Information were collected by personal interviewing, questionnaires, medicinal practitioners, general preparation method of medicine. Local name of plant and their uses to cure arthritis disease were documented by conducting interview. The area was visited several times for the collection of information related to medicinal plants. During interviews the local language is used and questionnaire was prepared for easy documentation regarding to medicinal plants.

III. RESULT AND DISCUSSION:-

Information on plants used as the traditional rheumatic medicines:-
3.1. Botanical Name-Calotropis procera Linn.
Common Name-Aak
Family-Asclepiadaceae
Medicinal uses & other biological activity- Different parts of this plant have been reported to exhibit anti-inflammatory, analgesic, anti-oxidant and antifungal activity .Leaves & stalk contain calotropin & calotropangonin. latex contain usharin, calotoxin & calactin(Kumar &Vijay 2007,Kumar et al 2011).

3.2. Botanical Name-Ricinus communis Linn.
Common Name-Arandi
Family-Euphorbiaceae
Medicinal uses & other biological activity- Leaf paste & seed oil is used for joint pain with swelling. The castor seed contains ricin, a toxic protein. Three terpenoids and a tocopherol-related compound have been found in the aerial parts of Ricinus communis. Traditional Ayurvedic medicinal practitioner considers castor oil the king of medicine for curing arthritic diseases. Castor oil contain palmitic, stearic, arachatic, hexadecenonic, oleic, linoleic, ricinalic. (Kabra et al 2011).

3.3. Botanical Name-Zingiber officinale Roscex.
Common Name-Adark
Family-Zingiberaceae
Medicinal uses & other biological activity- Ginger oil contain monoterpine, hydrocarbons, sesquiterpine hydrocarbons, oxygenated mono and sesquiterpines. Ginger is used as stomachic, an aromatic, a carminative, stimulant, flavouring agent. Ginger extract is one of the effective arthritis joint pain remedies recommended by physicians. Root poultice is used for joints pain & swelling. Chemical present in it are Terpenes, cineol, borneol, citral, camphene, phelandrene, ginerol, shogaol, zingefone, zinziberin. (Rehman et al 2011).

3.4. Botanical Name-Curcuma longa Linn.
Common Name-Haldi
Family-Zingiberaceae
Medicinal uses & other biological activity- Turmeric contains volatile oil, resins, starch grains and yellow color substances known as curcuminoids. The chief component of curcuminoids is known as curcumin. It contains compesterol, stigmasterol, B-sitosterol, cholesterol & fatty acids. It has antimutagenic, antispasmodic, antimicrobial and anticancer activities. Purified curcuminoids inhibited joint inflammation in both the acute and chronic phases of arthritis. (Kohli et al 2005).

3.5. Botanical name-Ficus bengalensis Linn.
Common name-Banyan tree
Family-Moraceae
Medicinal uses & other biological activity- -The bark, leaves and fruits of this group are used as astringent, haemostatic, anti-septic, anti-inflammatory, antioxidant and anticancer agent. The α-L. rhamnoside and leucogynidin 3-0-α-D galactosylicellobioside, glucoside, beta glucoside, pentatriacant-5-one, beta sitosterolalpah-D glucose19-20. A glycoside of leucopelargonidin was also isolated from the bark and it has anti diabetic effect. Anti rheumatic activity of the methanolic extract of the bark of Ficus bengalensis were studied. (Amandeep et al 2012).

3.6. Botanical name-Withania somnifera Linn.
Common name-Ashwagandha
Family-Solanaceae
Medicinal uses & other biological activity- The alkaloids, withanine, pseudo-withanine, tropine, pseudo-tropine, sommiferine, somnine are mainly present in Winter cherry. Two acyl glucosidesviz sitoindoside-7 and sitoindoside-8 have been isolated from roots.The plant has been useful as an aphrodisiac, liver tonic, anti-inflammatory agent & more reagent treat to Ashthma ,ulcer, insomnia. It help in arthritis, fatigue & stress disorder. (Mirjalili et al 2009).

3.7. Botanical name- Justicia gendarussa Linn.
Common name -Black adusa
Family- Acanthaceae
Medicinal uses & other biological activity- -Chemical analysis of aerial parts of Justicia gendarussa Linn., shows the presence of b-sitosterol, b-Sitosterol-b-D-glycoside and aromadendrin. The leaf of the plant is recommended to treat ailments such as rheumatism, arthritis, muscle pain. There are no published scientific studies on the anti-arthritic activities of the leaves of J. gendarussa or its potential toxicity. Therefore, the objective of this study is to examine the anti-arthritic potential and toxicity of the Ethanolic leaf extract of this plant. It is useful in asthma rheumatism and colics of children. (paval et al 2003).

3.8. Botanical name- Diospyros melanoxylon Roxb.
Common name- Tendu
Family: Ebenaceae

Medicinal uses & other biological activity - The extract produced marked inhibitory effect on edema especially on secondary immunological arthritis and caused graded inhibition of both phases of formalin-induced pain. The methanolic extract contains several phytochemicals like terpenoids, alkaloids, glycosides, flavonoids, steroids. A part made from the bark is applied to oils & tumors. The presence of flavonoids, tannins, saponin, steroids may attribute to its anti-rheumatic activity as well as modifying the autoimmune system. Naphthalene derivatives, Nepthoquinone are the chemical present in it. Traditional healers used as tendu belan in curing in arthritis. A paste made from the bark is apply to boils & tumors. (Sunita et al 2012).

3.9. Botanical name - Mangifera indica Linn.
Common name - Aam

Family: Anacardiaceae

Medicinal uses & other biological activity - Main constituents present in it are polyphenols, flavonoids, triterpenoids, mangiferin, isomangiferin, tannin and gallic acid derivatives. Mangiferin is extracted from mango at high concentrations from the young leaves, bark and from old leaves. The methanolic extract of Mangifera indica posses the anti-inflammatory activity show in the arthritic parameter like arthritic index, paw edema and rheumatoid factor. (Garrido et al 2001, 2004).

3.10. Botanical name - Hemidesmus indicus Linn.
Common name - Indian sarsaparilla

Family: Asclepiadaceae

Medicinal uses & other biological activity - Hemidesmus indicus Linn., is a species of plant that is found in South Asia. Root oil is used for joint pain. 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, blood purifier. (Mehta et al 2012).

3.11. Botanical name - Piper nigrum Linn.
Common name - Black pepper

Family: Piperaceae

Medicinal uses & other biological activity - Black pepper is indigenous & cultivation in south India. Pepper contain an alkaloid, piperine, piperidine & starch. Leaf, fruit oil are used for joint pain with swelling. Piperine isolated from black pepper. Piperine is used in arthritis (Agrawal et al 2009).

Common name - Ashok

Family: Caesalpiniacae

Medicinal uses & other biological activity - Preliminary phytochemical methanolic and ethanolic extracts indicate the presence Carbohydrates, tannin, flavonoid, saponin, glycosides, proteins and steroids (Mallikharjuna et al, 2007). It is used as spasmodic, oxytotic, uterotonic, anti-tumour, anti-progestational, anti-estrogenic, anti-cancer and anti-rheumatoid arthritis. Methanol extract of Saraca asoca Roxb., reduced the paw thickness in adjuvant induced arthritic rats (saravanan et al 2011).

3.13. Botanical name - Cleome gynandra Linn.
Common name - Spider plant

Family: Capparadaceae

Medicinal uses & other biological activity - It is used in the treatment of rheumatoid arthritis. It contains chemical constituents such as triterpenes, tannins, anthroquinones, flavonoids, saponins, steroids, resins, lactins, glycosides, sugars phenolic compounds and alkaloids and these compounds might be responsible for anti-rheumatic properties. Ethanolic extract of Cleome gynandra Linn., possess anti arthritic effect (Narendhirakannan et al 2005, 2007).

Common name - Shallai

Family: Burseraceae

Medicinal uses & other biological activity - It has shown anti-inflammatory antiarthritic activities. Extract of this gummy oleoresin have also been used anti-atherosclerotic. It contain β-boswellic acid in resin portion. Boswellia mainly contain volatile oil, terpenoids & sugar (Kumar 2010).

3.15. Botanical name - Ammania baccifera Linn.
Common name - Aginbuti(Rice field weed) Aginbuti, Banmirchi

Family: Lythraceae
Medicinal uses & other biological activity - It contains sterols, glycosides, alkaloids, triterpanoids, & saponin. The aerial part of *ammania baccifera linn.* significant anti-inflammatory & anti-arthritic activity. Shows the presence of β-sitosterol, b-Sitosterol-b-D-glycoside and aromadendrin. Alcoholic extract inhibit of inflammation arthritis (Tripathy et al 2010).

3.16. Botanical name- Aloe barbadensis Linn.  
Common name- Aloe ghrityumkadi  
Family- Liliaceae

Medicinal uses & other biological activity – Aloe vera stimulates the immune system & it is a powerful anti-inflammatory agent. It contain many component including vitamin A, B, C & E & minerals, sugars, enzymes Anthraquinones ,fatty acid & human important 20 amino acid . It drink is used as a tonic for patient suffering from arthritis. It gives therapeutic benefit and also antibacterial & antifungal properties .used as blood purifier, anti-inflammatory & fever reliever. (Joshph et al 2010).

3.17. Botanical name- Leucas aspera Linn.  
Common name- Dronapushpi  
Family- Lamiaceae 

Medicinal uses & other biological activity - It contains triterpenoids, oleoanlic acid, ursolic acid and b-sitosterol, nicotine, sterols, glucoside, diterpenes and phenolic compounds. Ethanolic extract of *Leucas aspera Linn.* , Show anti rheumatoid arthritis effect in Complete Freund's adjuvant induce arthritis .The plant is used traditionally as an antipyretic and insecticide (Prajapati et al 2010).

3.18. Botanical name- Nyctanthes arbortristis Linn.  
Common name- Parijat  
Family- Oleaceae

Medicinal uses - It is used as laxative, diuretic, diaphoretic, used to expulse roundworm and threadworm in children’s, to relieve cough, also used for the treatment of rheumatoid arthritis. The leaves of *Nyctanthes arbortristis Linn.* , inhibited the acute inflammatory edema produced by different phlogistic agents, viz. carrageenin, formalin, histamine, 5-hydroxytryptamine and hyaluronidase in the hindpaw of rats. (Bhalerao et al 2011).

Common name- Nirgundi  
Family- Verbanaceae

Medicinal uses & other biological activity - It is widely used in traditional medicine, particularly in South and Southeast Asia. It mainly contains many polyphenolic compounds, terpenoids, glycosidic iridoids and alkaloids. It is used in the treatment of angina, cold and coughs. It is used as antibacterial agent. The fresh berries are pounded to a pulp and used in the form of a tincture for the relief of paralysis, pains in the limbs, weakness . (Subramani et al 2009).

3.20. Botanical name- Terminalia chebula Retz .  
Common name- Haritaki  
Family- Combretaceae

Medicinal uses & other biological activity - Seed oil used for joint pain. It has also present tannic acid, chebulini cacid , resin, palmitic acid , oleic acid. The hydroalcoholic extract of *T. chebula* produced a significant inhibition of joint swelling as compared to control in both formaldehyde-induced and CFA-induced arthritis. *T. chebula* could be used as a disease-modifying agent in treatment of rheumatic (Nair et al 2010).

Common name- Amaltas  
Family- Caesalpinioideae 

Medicinal uses & other biological activity - Fruit poultice is used for frozen joints. It is useful for rheumatic joint. The root is used in rheumatic condition. Pulp of pod contain anthraquione , glycosides , sennosides A & B tannin & resin phenolic compound & flavanoids also reported. (Bhalerao et al 2012).

3.22. Botanical name- Solanum xanthocarpum (Schrad. & Wendle.)  
Common name- Bhakhateri  
Family- Solanaceae

Medicinal uses & other biological activity - Leaf oil is used for joint pain. The part applied on swollen & painful joint in arthritis, reduces the pain & swelling effectively .Isolation of caffeic acid & oleandric acids. It is especially used for body joint pain . Glucoalkaloids and sterols. Fruits give solasonine, solamargine, and...
solasodine; and sitosterol. (+)-solanocarpine, solanocarpidine, diosgenin, sitosterol. The herb is made to a paste and applied on swollen and painful joints to reduce the pain and swelling in arthritis. (Siddiqui 1983).

3.23. Botanical name- *Astercantha longifolia*
Common name- Talmakhana
Family- *Acanthaceae*

**Medicinal uses & other biological activity** -The main constituents are alkaloids, flavonoids, phenolic, carbohydrates, tannins, sugar and starch. It is used in the treatment of inflammation and rheumatoid arthritis in folk medicine. Root and leaf is an antirheumatic. (Doss et al 2012).

Common name- Charota
Family- *Caesalpinioideae*

**Medicinal uses & other biological activity** -Leaf paste used in rheumatism and also purgative. *Cassia tora* Linn. Leaves show anti-arthritis. Anthraquinone, β-sitosterol, chrysophanol marker constituents, physcion, emodi, rubrofusarin, chrycophonic acid. 9-anthrone, palmitic acid, succinic acid, stearic, d-tartaric acid, uridine, quercitin and many more other chemical compounds. (Neelam Balekar et al 2013).

Common name- Imali
Family- *Caesalpinioideae*

**Medicinal uses & other biological activity** – *Tamarindus indica* Linn. of the active phenolic component We found 32 fatty acids, 12 essential elements Ar, Cd, Ca, Cu, Fe, Na, Mg, K, P, Pb, Zn. Highest potassium accumulation in it. It has Histamine, Serotonin, Prostaglandin, Bradykynin, Leucotriene present in it. It has anti-inflammatory, analgesic & antioxidant properties. (Anupama et al 2012)

Common name- Kinjal
Family- *Combretaceae*

**Medicinal uses & other biological activity** -It is used in cough, bronchitis, cardiac debility, diabetes, wound and skin disease. It contains alkaloids, triterpenes, flavanoids, saponins, tannins. The aqueous extract of *Terminalia paniculata* Roxb., bark anti-rheumatic activity in arthritis (Talwar et al 2011).

3.27. Botanical name- *Carthamus tinctorius* Linn.
Common name- Kusum
Family- *Compositae*

**Medicinal uses & other biological activity** - The seed yield valuable oil, used in healing sores & in rheumatism. Chemical present is lycorine, alkaloid, tazattine. (Asgarpanah & Kazemivash 2013).

3.28. Botanical name- *Capparis deciduas* L.Edgen
Common name- Karil
Family- *Capparadaceae*

**Medicinal uses & other biological activity** -The bark is used in cough, asthma and inflammation. The root is given in intermittent fevers & rheumatism. In it high amount of carbohydrates, protein, lipid, glutamic acid, ascorbic acid, methionine & cysteine in lowest amount present in it. Chemical present in it are Sterols, Diterpenes, Alcohols, Capparoor, Capparosine, Capparadine. It has analgesic, anti-inflammatory, and anti asthmatic in properties. (Baby Joseph & D.Jini 2011)

3.29. Botanical name- *Spondias mangifera* Wild
Common name- Amra(hogpum)
Family- *Anacardiaceae*

**Medicinal uses & other biological activity** -Bark grounded & mixed with water, it is rubbed on both articular & muscular rheumatism. Chemical present in it are flavanoids, phenolic compound, tannins, terpenoids. (Muhammad Arif et al 2011).

Common name- Khaja
Family- *Euphorbiaceae*

**Medicinal uses & other biological activity** - The bark is used for tanning and mixed with gingili oil is applied in rheumatism. Phenolic, flavonoid, tannins, carbohydrates and mucilage content, proanthocyanidin, ellagic acid mucilage, flavonoids and carbohydrates. Lignin, starch, Protien, alkaloids, steroids, glucoside, tannins (Kokate 2007).
### 3.31. Botanical name- Capsicum annum Linn.  
**Common name-** Mirch  
**Family-** Solanaceae  
**Medicinal uses & other biological activity** - Dried chilies are carminative and medicinally used as counter irritants in lumbago, neuralgia and rheumatism. It has proteins, ascorbic acid, P, Zn, Cu, capsicum, capsaicin, steroid, triterpenoids, coumarin, glycoside & alkaloids. (Pandey et al 2012).

### 3.32. Botanical name- Dolicus lablab Linn.  
**Common name-** Semi  
**Family-** Pappilionateae  
**Medicinal uses & other biological activity** - It has anti-inflammatory and anti-arthritic properties. It is rich in nutrients and good source of protein fibers, vitamins, antioxidants & phyto chemicals. Used as diuretic, astringents & rheumatism. Chemical present in it are Sterols, fatty acid, palmitic acid, palmitoleic acid, linoleic acid & alkaloids. (Albert et al 2002).

### 3.33. Botanical name- Sesbania sesban Aculeata  
**Common name-** Jait  
**Family-** Pappilionateae  
**Medicinal uses & other biological activity** - It has anti-inflammatory and anti-arthritic properties. The leaves are used as poultice in rheumatic swelling & other swellings. N, fibre, Fe, Ca, β-carotene, amino acid, arginine histidine, isoleucine, leucine, lysine, methionine, phenylalanine, threonine, valine (Patial et al 2010).

### 3.34. Botanical name- Azadiricha indica A Juss  
**Common name-** Neem  
**Family-** Meliacceae  
**Medicinal uses & other biological activity** - Neem oil is used in rheumatism. Azadiractin, nimbidin, triterpenoids, steroids and glycosides are the component present in it. Different Pharmacological studies in comparison to different inflammatory drugs. It shows that induced ankle feet joint swelling and paw edema arthritis Nimbilidin has better positive significant activity to used by other drugs. (Kaushik et al 2002).

### 3.35. Botanical name- Syzygiun oerculatum (Roxb.)Niedz.  
**Common name-** Raijamun  
**Family-** Myrataceae  
**Medicinal uses & other biological activity** - An extract of root boiled down to consistency of gur and is rubbed on joint for the rheumatism. Leaves are used in dry form and fruits are eaten to treat Rheumatic pain. It has anti fungal and anti-bacterial properties. (A.Kar et al 2013).

### 3.36. Botanical name- Linum usitatissium Linn.  
**Common name-** Til  
**Family-** Linaceae  
**Medicinal uses & other biological activity** - Dried ripe seed are used in form of poultice for rheumatism swelling, gout, etc. Richest source of omega 3 fatty acid, alfa linolenic acid (ALA), 3fatty acid EPA, DHA seed oil. Its chemical present in its are per 100gm. Saturated fat 3.7 gm., poly unsaturated fat 29gm. monounsaturated fat 8gm, Sodium 30mg, Potassium 813mg, Carbohydrates 29gm, Dietary fiber 27gm Sugar1 6gm. Vit. C, B, Mg, Ca, Omega 3 are chemical messengers that facilitate communication between nerve cells. It is The source of Serotonin (emotional stability) and Dopamine (positive emotions). Omega 6 & Omega 3 are present in it 1:4 ratio. It helps in Osteoporosis & muscoskeleton osteo arthritis and as anti-inflammatory. (Ila et al 2013).

### 3.37. Botanical name- Ocimum grattissimum Linn.  
**Common name-** Ram tulsi  
**Family-** Lamiaceae  
**Medicinal uses & other biological activity** - The plant are aromatic and baths of fumigation prepared with it are recommended in the treatment of rheumatism, paralysis, neuroglia. Essential oil alkaloids, steroid tannin oleanic acid, Oleanolic acid, terpene, ocimene, β-earylphyllene, sesquiterpene, phytochemicals present in it. It has anti-inflammatory and analgesic properties. (K.S. Prabhu et al 2009).

### IV. CONCLUSION:-

The present study reveals that the old methods of rheumatic treatment are still in use in the area and the aged local experts are present to whom the whole area worked for rheumatic diseases and are found to be more effective as their methods are simple and especially more cost effective for poor people. All the plants and their chemical constituents or extracts are used by different types of medical practitioners of our traditional...
These plants technical pharmacological analysis also confirm the present medicine has used chemicals and their properties to cure arthritic patients. It also showed that the plants & their properties are used by practitioners on the basis of patients conditions and their requirements as the symptoms. Different pharmacological studies, metabolites present in it, also showed that present metabolites of plants are effectively worked as medicine in different chemical induced (caragenin, formalin etc.) arthritic models of study and it produced effective result. Only the remain work is quantity of that chemical (in the form of medicine) by the medical practitioners.
Curcuma longa Linn.  
Calotropis Procera Linn.

Camellia sinensis Linn.  
Ficus bengalensis Linn.

Nyctanthes arbortristis Linn.  
Vitex negundo Linn.
Justicia gendarussa Linn.

Terminalia paniculata Roxb.

Terminalia chebula Retz.

Saraca asoca Roxb.

Leucas aspera Linn.

Mangifera indica Linn.
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