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A Review on Medicinal Plants with Anti- Arthritis Activity

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Abstract

Rheumatoid arthritis (RA) is a chronic autoimmune disorder characterized by joint inflammation, leading to pain, stiffness, and functional impairment. Its etiology involves a complex interplay of genetic predispositions and environmental factors, such as smoking and obesity, which trigger inflammatory responses mediated by cytokines like interleukin-1β and interleukin-6. Recent studies emphasize the effectiveness of a "treat-to-target" (T2T) approach in managing RA, aiming for remission or low disease activity through regular monitoring and personalized therapy adjustments. Advances in treatment options, including Janus kinase inhibitors and biologic disease-modifying antirheumatic drugs (DMARDs), have shown promise in controlling disease activity and alleviating symptoms. In addition to conventional therapies, various medicinal plants have demonstrated anti-arthritis properties. Notable examples include Aconitum kusnezoffii (caowu), which contains anti-inflammatory diterpenoid alkaloids; Ligusticum chuanxiong (Chuanxiong Rhizoma), known for its antioxidant effects; and Tripterygiumwilfordii (Thunder God Vine), whose active component triptolide exhibits significant anti-inflammatory activity. Other plants such as Boswellia serrata, recognized for its boswellic acids, and Cinnamomum cassia, which contains therapeutic terpenoids, also show potential benefits. A comprehensive management strategy that integrates both conventional treatments and herbal remedies is essential for improving the quality of life for individuals living with RA.

Keywords- Medicinal Plants, Anti-Arthritis activity, Rheumatoid Arthritis (RA), Psoriatic arthritis.

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INTRODUCTION

Arthritis is a complex group of disorders characterized by inflammation of the joints, which leads to pain, stiffness, and functional impairment. Among these, rheumatoid arthritis is one of the most studied types because of its autoimmune nature and significant impact on quality of life. Research has shown that RA is caused by a combination of genetic predisposition and environmental factors, such as smoking and obesity, which trigger inflammatory responses mediated by cytokines like interleukin-1β and interleukin-6. This inflammation can lead to joint destruction and systemic complications if not properly managed.1. Recent studies emphasize the importance of a "treat-to-target" (T2T) approach in managing RA, which aims for remission or low disease activity through regular monitoring and therapy adjustments. Evidence suggests that this strategy leads to better clinical outcomes compared to routine care, reducing comorbidities and improving work productivity 2. Moreover, knowledge in the pathophysiology of RA has made possible the introduction of new drugs aimed at inhibiting specific inflammatory pathways, such as Janus kinase inhibitors and biologic disease-modifying antirheumatic drugs that have proven useful in controlling pain and disease activity. 3.4

Types of arthritis -

Rheumatoid arthritis (RA) is another significant type, classified as an autoimmune disorder where the immune system attacks the synovial lining of joints, leading to inflammation and potential joint damage. RA affects multiple joints simultaneously and can result in systemic symptoms like fatigue. Treatment strategies have evolved significantly, focusing on reducing joint inflammation, maximizing function, and preventing joint destruction through disease-

modifying antirheumatic drugs (DMARDs) and biologic therapies 5.
Psoriatic arthritis, or PsA, is another related condition caused by psoriasis and has its autoimmune nature similar to RA, which can cause joint pain and skin changes; an acute attack of severe, sharp pain in any joint, mainly in the big toe, resulting from uric acid crystal deposition, is gout; JIA stands for Juvenile idiopathic arthritis and its variations can cause chronic pain and swelling in affected joints of children.6,7

Symptoms of arthritis –
Common symptoms include pain, which can be constant or intermittent and tends to worsen with activity or at the end of the day. Stiffness is also common, especially in the morning or after periods of inactivity, and some patients report stiffness that lasts over 45 minutes, a feature more commonly associated with inflammatory arthritis. Swelling around joints can occur accompanied by warmth and redness over the affected parts of the body. Other individuals may also find themselves experiencing fatigue brought on by persistent pain and possibly sleep disturbances of their condition. Depending on the intensity level, these manifestations can result in reduced range of motion and possible functional impairment, which will indeed affect the life quality and, consequently, life activities. 8

Medicinal plant having anti – Arthritis activity:

Sr.No .	Plant name	Family	Part used	Active constituents	Reference
1	Aconitum kusnezoffii (Caowu)	Ranunculaceae	Dry root	Diterpenoid alkaloids including aconitine, mesaconitine, hypaconitine, neoline, talatizamine, and deoxy-aconitine	9
2	Ligusticum chuanxiong (Chuanxiong Rhizoma)	Apiaceae	Rhizome	Ligustilide, 3-butyrolactone, cypressene, ferulic acid, tetra-methylpyrazine, palmitic acid, carotene, and β-sitosterol.	9
3	Clerodendrumserratum	Lamiaceae.	Stem, root, aerial parts	Ursolic acid, stigmasterol, bis(2-ethylhexyl) phthalate	10
4	Sophora flavescens	Fabaceae	Root	Prenylated flavonoids	11
5	Commiphora caudata	Burseraceae	Leaves	Essential oils, resin	11
6	Coptosapeltaflavescens	Rubiaceae	Aerial parts	Phenolics, flavonoids	12
7	Boswellia serrata	Burseraceae	Resin	Boswellic acids.	13
8	Tripterygiumwilfordii (Thunder God Vine)	Celastraceae.	Root	Triptolide, celastrol, glycosides.	14
9	Cinnamomum cassia (Cassia)	Lauraceae	Bark	Terpenoids, phenylpropanoids, glycosides.	14

10	Astragalusarbusculinus	Fabaceae	Roots	Saponins, flavonoids, polysaccharides.	15
11	Urtica pilulifera (Himalayan Nettle)	Urticaceae	Leaves and roots	Flavonoids, phenolic compounds	16
12	Cedrusdeodara (Himalayan Cedar)	Pinaceae.	Wood and essential oil.	Terpenes, flavonoids.	17
13	Sidarhombifolia (Creeping Sida)	Malvaceae.	Leaves and roots.	Flavonoids, tannins.	17
14	Equisetum arvense (Horsetail)	Equisetaceae.	Aerial parts.	Silica, flavonoids, saponins.	18
15	Panaxnotoginseng (Tienchi Ginseng)	Araliaceae	Roots	Ginsenosides, flavonoids	14
16	Symphytum officinalis (Comfrey)	Boraginaceae	Roots	Allantoin, rosmarinic acid.	15
17	Euphorbia hirta (Asthma Weed)	Euphorbiaceae	Aerial parts	Euphorbon, flavonoids.	19
18	Moringa oleifera (Drumstick Tree)	Moringaceae	Leaves and seeds	Isothiocyanates, flavonoids, vitamins A, C, and E	20
19	Cananga odorata (Ylang-Ylang)	**Annonaceae**.	Flowers.	Linalool, eugenol, and other essential oils	21
20	Cleome viscosa	**Cleomaceae**	Aerial parts	Flavonoids, glucosinolates	21

CONCLUSION

Rheumatoid arthritis (RA) is a challenging autoimmune disorder that significantly impacts the daily lives of those affected, causing chronic inflammation in the joints, leading to pain, stiffness, and fatigue. This condition arises from a complex interplay of genetic factors and environmental triggers like smoking and obesity, which provoke the immune system to attack the synovial lining of the joints. As symptoms can escalate over time, effective management has evolved towards a "treat-to-target" approach, focusing on achieving remission or low disease activity through regular monitoring and personalized treatment plans. Advances in therapies, including Janus kinase inhibitors and biologic disease-modifying antirheumatic drugs (DMARDs), offer new hope for better symptomcontrol and improved quality of life. Ultimately, a comprehensive strategy that addresses both joint health and overall well-being is essential for those living with RA.

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