Herbal Remedies: Promisingly Effective for Rheumatoid Arthritis

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**ABSTRACT**

Rheumatoid arthritis is most significant and devastating to the human body. It is an autoimmune disorder that affects almost 2-4% of the population of the world. Rheumatoid arthritis usually occurs when the immune system works against one’s own body and attacks it. Rheumatoid arthritis generally affects the joints like wrists, elbows, knees and ankles. Even though the reason for causing RA is unknown, the contributing factors for the development of the RA are of various types. Usually women are more affected by RA then men due to the prevalence of hormonal changes. Age is also an important factor that contributes for the development of RA. The general treatment approach for rheumatoid arthritis is to prevent further damage of joints and lower the inflammation and pain. Symptomatic treatment is also the base for RA treatment in many patients. Considering these side effects and limited use of the synthetic drugs, a deep focus has been put into herbal drugs as useful remedies to treat RA successfully. So there has been as growing trend towards development of polyherbal formulation employing potent herbs to treat the disease. Scientific investigations had been carried out to prove the potency of the herbs to treat RA in various animal and invitro models. Many polyherbal formulations had been marketed successfully and were prescribed by the physician. In this view the standardization stands as utmost important parameter for proving the quality of the formulation. Considering the marketed formulations attempts are to be made to determine the quality and effect of the herbal formulations. Investigations are also to be made to determine the interaction between the herbs employed in the formulation.

**INTRODUCTION**

Pains and Inflammation are often correlated medical terminologies that refer to redness, rise in temperature and swelling of the area. Arthritis is derived from two words; arth meaning joint and it is meaning inflammation. Arthritis is one of the presentations of inflammation which affects various joints in the body like hips, knees, spine and other places. They usually affect all the joints weight bearing and non weight bearing types. The symptoms are related to inflammation like pain, rigidity; fatigue generalized weakness and swelling of joints. If it left untreated, it will lead to the damage of joint, destruc
| Plant name                  | Family       | Part used                        | Extract/active principle | Scientific model                                      |
|----------------------------|--------------|----------------------------------|--------------------------|-------------------------------------------------------|
| Alpinia galanga Linn,      | Zingiberaceae| Rhizomes                         | Galangin                 | adjuvant-induced arthritis                             |
| Aquilaria agallocha        | Thymelaeaceae| Leaves and heart wood oil         | ethanolic extract        | Freund's adjuvant induced arthritic rat model          |
| Barleria prionitis         | Acanthaceae  | Leaves                           | Fractionation            | Freund's Complete Adjuvant-induced chronic immunological arthritis |
| Callicarpa macrophylla Vahl,| Verbenaceae  | Flower                           | ethanolic extract        | protein denaturation model; Membrane stabilization model |
| Cardiospermum halicacabum Linn, | Sapindaceae | leaves                           | ethanolic extract        | CFA-induced arthritis                                 |
| Citrullus colocynthis      | Cucurbitaceae| Colocynth root                   | ethanol extract          | osteoarthritis in chondrocyte cells                   |
| Commiphora myrrha Nees     | Burseraceae  | Guggulu                          | extract                  | osteoarthritis (OA) models                           |
| Cordia dichotoma           | Boraginaceae | fruits                           | gum                      | carrageenan-induced rat paw edema model               |
| Coriandrum sativum         | Apiaceae     | Seeds                            | hydroalcoholic extract   | formaldehyde and Complete Freund's adjuvant (CFA) induced arthritis |
| Euphorbia tirucalli        | Euphorbiaceae| fruits                           | triterpenoid fraction    | collagen induced arthritis model                      |
| Ficus benghallensis        | Moraceae     | Roots                            | ethanol and aqueous extract | Freund's adjuvant induced arthritis                  |
| Heliotropium indicum       | Boraginaceae | Aerial parts                     | aqueous extracts         | Clinical trails                                       |
| Jatropha curcas            | Euphorbiaceae| leaves                           | ethanolic extract        | CFA-induced arthritis                                |
| Juglans regia              | Juglandaceae | Aerial parts                     | ethanolic extract        | xylene induced ear edema                              |

Continued on next page
| Plant name                  | Family            | Part used | Extract/active principle | Scientific model                                      |
|-----------------------------|-------------------|-----------|--------------------------|-------------------------------------------------------|
| Justicia gendarussa         | Acanthaceae       | Aerial parts | alcoholic extract        | collagen-induced arthritic rat models                 |
| Kaempferia galanga         | Zingiberaceae     | Aerial parts | alcoholic extract        | carrageenan-induced rat paw edema                      |
| Lantana camara             | Verbenaceae       | leaves     | hydroalcoholic extract   | turpentine induced arthritis                           |
| Lawsonia inermis           | Lythraceae        | leaves     | hydroalcoholic extract   | formaldehyde induced arthritis model                   |
| Myxopyrum serratulum        | Oleaceae          | leaves     | ethanolic extract        | protein Denaturation Method                            |
| Naravelia zeylanica        | Ranunculaceae     | leaves     | hydroalcoholic extract   | carrageenan induced and Freud's adjuvant induced arthritis |
| Oroxylum indicum           | Bignoniaceae      | Root bark  | ethyl acetate extract    | Hot plate method.                                       |
| Pandanodis-sinus Piper nigrum | Pandanaceae      | Oil from plant | Methanolic extract Oil   | formalin-induced chronic paw edema                     |
| Pandanodis-sinus           | Piperaceae        | Fruits     | Methanolic extract Oil   | carrageenan-induced acute paw model                   |
| Pongamia pinnata           | Fabaceae          | Seeds      | ethanolic extract        | protein denaturation model; Membrane stabilization     |
| Premna corymbosa           | Verbenaceae       | Leaves     | ethanolic extract        | Complete Freund's Adjuvant                             |
| Rubia cordifolia           | Rubiaceae         | Stems and roots | Ethanol extract          | Bovine type II Collagen                                |
| Sida cardifolia            | Malvaceae         | Aerial parts | Ethanol extract          | carrageenan-induced acute paw model                   |
| Stereospermum colais       | Bignoniaceae      | Stems      | Pet. Ether               | protein denaturation method                            |
| Trachyspermum ammi         | Apiaceae          | Seeds      | Ethanol extract          | protein denaturation method                            |
| Vitis vinifera             | Vitaceae          | Seeds      | ethanolic extract        | protein denaturation method                            |
tation and disability to some extent (Firestein and McInnes, 2017).

Out of all the types of arthritis, Rheumatoid arthritis is most significant and devastating to the human body. It is an autoimmune disorder that affects almost 2-4% of the population of the world. Rheumatoid arthritis usually occurs when the immune system works against one’s own body and attacks it. This attack takes place near the joints and other mobile areas due to the presence of cartilage and certain enzymes. This occurs due to the malfunctioning of the immune system where the reason for this is still not known. The symptomatic onset starts over a long period of time when the joints and cartilages are more affected (Kobelt, 2009).

Rheumatoid arthritis generally affects the joints like wrists, elbows, knees and ankles. Even though the reason for causing RA is unknown, the contributing factors for the development of the RA are of various types. The reasons being given most priority are the genetic history of the disease in family. This factor contributes for about 25% of the total RA cases. Usually women are more affected by RA then men due to the prevalence of hormonal changes. Age is also an important factor that contributes for the development of RA. People of 40-60 yrs of age commonly develop RA although they can develop the disease at any age. Though the disease affects the people at prime age, geriatrics are affected by symptoms more adversely than others. Mobility issues and other pain related issues make the disease much worse in old age people (Saag et al., 2008). RA is neither an infectious nor a contagious disease. Few life style related habits also contribute to RA like smoking and sedentary life style and stress.

**Treatment of RA**

The general treatment approach for rheumatoid arthritis is to prevent further damage of joints and lower the inflammation and pain. Symptomatic treatment is also the base for RA treatment in many patients. Pain is the most important symptom that is aimed to control at the basic level. With the invention of Anti-rheumatic disease modifying drugs (DMARD’s), the medication profiles of the treatment of RA has drastically changed. In symptomatic treatment there are two kinds of drugs.

NSAIDs-these are Non Steroidal anti-inflammatory drugs that are used to treat inflammation and relieve pain that is caused due to arthritis. These medicines cause only symptomatic relief from the arthritic pain but do not prevent the progressive damage caused due to the disease. The NSAID drug suppresses the pain but do not cure RA. Scientific literature also supports the disadvantage of these drugs in treating the disease as such (Deighton et al., 2009).

The other class of drugs is the corticosteroid class. These are hormonal similar and steroid in nature. They are similar to those hormones produced in the adrenal glands and the most important use of those drugs being the anti-inflammatory activity that is similar to cortisol drug. These drugs control inflammation and are slow acting. It may take a longer duration of treatment than expected to treat arthritis. But the use of steroids should be limited to shorter periods to avoid side effects.

**Herbs used to treat RA**

Considering these side effects and limited use of the synthetic drugs, a deep focus has been put into herbal drugs as useful remedies to treat RA successfully. So there has been a growing trend towards development of polyherbal formulation employing potent herbs to treat the disease. Scientific investigations had been carried out to prove the potency of the herbs to treat RA in various animal and invitro models. The below is the list of herbs that had been proven to possess anti-rheumatic property and the valid scientific results had been published in research papers (Chandrasekar and Chandrasekar, 2017; Kadhim et al., 2016) (Table 1).

**Polyherbal formulations**

The herbal drugs were found to be potent and safe in treating RA effectively. There was a rising concern on the usage of herbs as whole. So the polyherbal formulations had been prepared and standardized by various companies and officially marketed as the RA drugs. These formulations were branded across in the medical market in the form of various formulations. These formulations utilize the ancient knowledge of ayurveda and other systems of traditional medicine and incorporate them into the scientific research (Table 2). The polyherbal formulations are prepared using modern techniques and advanced machinery in large scale (Sara and Sailaja, 2019).

**DISCUSSION**

The only major hurdle for these polyherbal formulations is the drug-drug interactions which is common in herbs especially when the active principle in the herb is potent. The herbal interactions make the situation more badly as the interactions are hard to estimate and analyze. This western concept of combining drugs and treating the disease is remarkable but with limited use when it come to herbs. So the prior study about the herbs and their chemical composition is necessary before incorporating
Table 2: Polyherbal anti-rheumatic formulations

| Formulation name     | Type of formulation | Ingredients                                      | Manufacturer                        |
|----------------------|---------------------|--------------------------------------------------|-------------------------------------|
| Artha cure Oil       | Oil                 | Guggulu; vitex negundo                           | Be Sure Health Care (P) Ltd         |
| Arthcure Capsules    | Capsules            | Guggulu; vitex negundo                           | Be Sure Health Care (P) Ltd         |
| Majoon Suranjan Tablets | Tablets           | Unani formulation pinus sylvestris; vitex negundo; celastrus paniculatus | Qarshi herbal products             |
| Ortho Joint Oil      | Oil                 |                                                  | SBS Biotech Ltd                     |
| Rheuma off Gold tablets |                  | Guggulu; Ashwagandha, Swarna bhasma             | Virgo UAP Pharma (P) Ltd            |
| Rumalaya Forte Capsule |                  | Boswellia, guggulu Swarna bhasma                | Himalaya Global Holdings Ltd.       |
| Rheumartho Gold Tablets | Tablets           | Tinospora cordifolia                            | Himalaya Global Holdings Ltd.       |
| Rumalaya Liniment    | Capsule             | Pluchea lanceolata, Paederia foetida, Vitex negundo, Zingiber officinalis, Strychnos nuxvomica | Anglo French Drugs and Industries Ltd |
| Sudard Suspension    | Suspension          | Chineese herbs                                   | Zhong-Yue Herbal Pharmaceutical Union Company |

or combining them into formulations. There had been investigations in this arena and is continuing to build more documentation to prove the same (Singh et al., 2011). This also gives a hope to the patients and scientists that emerging trends in the formulation development incorporating herbs is best to treat the disease effectively. There had been studies that showed synergy between herbs when used concurrently and this can be used for the fullest advantage for treating the disease successfully. With all this investigations we can also hope that the disease can be treated better while offering a cure and treating the symptoms at the same time (Petchi and Parasaruman, 2015).

CONCLUSIONS

There were numerous plants and medicinal herbs that are used to treat Rheumatoid arthritis. Most of them were investigated to prove the activity too. The herbs had been incorporated into herbal formulations that are used to treat the disease effectively. Many polyherbal formulations had been marketed successfully and were prescribed by the physician. In this view the standardization stands as utmost important parameter for proving the quality of the formulation. Considering the marketed formulations attempts are to be made to determine the quality and effect of the herbal formulations. Investigations are also to be made to determine the interaction between the herbs that are employed in the formulation.

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Conflict of interest

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