

## Folk Medicine in the Therapeutics of Rheumatoid Arthritis

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Rheumatoid arthritis is a chronic systemic inflammatory disease that affects the joints, been the most common chronic arthropathy. Its affects is approximately 1% of the world population, and the prevalence is three times more in men than in woman [1-4]. However, the incidence of rheumatoid arthritis increases with ageing, and at this age differences between genders became equal. Its inception occurs most commonly between 35 and 50 years-old, and it is known that their incidence is related to genetic and/or environmental factors [5]. The symptoms of joint inflammation are maximum at the beginning of the clinical and erosions occur predominantly in the first two years of the disease [6].

This disease primarily affects the synovial membrane with destruction of articular cartilage and subchondral bone invasion, with characteristics of a chronic inflammatory process. Among the numerous factors involved in the pathogenesis, it is believed that an antigenic stimulus start the process in genetically predisposed individuals and favorable environmental conditions [6]. Its pathogenesis is complex, involving the participation of an immune-inflammatory response with the release of inflammatory mediators, including cytokines (TNF- $\alpha$ , IL-1, IL-2 and IL-6) and eicosanoids that contribute to the perpetuation and progression of synovitis joint [7].

The therapeutics actually used, has helped to cure several aspects of rheumatoid arthritis, however, side effects of allopathic medicine, increasing trend of antibiotic resistance and chemicals and biopesticides causing dietary risk have made the situation more critical than ever before. Thus, its crucial the search for novel approaches in the treatment of this disease [8]. Over the years, humans found in folk medicine the therapeutic for various diseases. The first records documenting the use of approximately 1000 substances derived from plants in Mesopotamia. Furthermore, folk medicines are the better source to medicine, due to different compounds contained in its parts (flower, leaves, root, etc...) [9-11]. Indeed, traditional medical practices kept for years by civilizations serve as an effective basis for the discovery and development of novel therapeutic drugs modern base such maximizes the probability of obtaining a successful drug [12,13]. As an example of ethnopharmacological relevance on rheumatoid arthritis is the root of *Aconitum carmichaeli*, a popular traditional Chinese medicine, acting with safety and efficacy for disease especially rheumatoid arthritis [14]. Additionally, *Erycibe obtusifolia* and *Erycibe schmidtii*, which belong to the same genus as *Erycibe*, are widely used in traditional medicine for the treatment of joint pain and rheumatoid arthritis, containing the main active components with anti-nociceptive and anti-inflammatory activities [15]. Also, the alkaloids fraction of *Alstonia scholaris* leaf, three main alkaloids, picrinine, vallesamine and scholaricine, may produce the anti-inflammatory and analgesic effect peripherally based on several *in vivo* assays. In *in vitro* tests, alkaloids exhibited inhibition of inflammatory mediators (COX-1, COX-2 and 5-LOX), which is accordant with results on animal models. Besides, COX-2/5-LOX dual inhibitors found in the experiment, such as 16-formyl-5 $\alpha$ -methoxystrictamine, picralinal, and tubotaiwine might be valuable for further attention [16]. Furthermore, *Radix Toddaliae Asiaticae* (RTA), also named "Sanbaibang", is the dry root bark of *Toddalia asiatica* (L.) Lam. and has long been used as a traditional ethnic Chinese medicine for

its considerable activity to alleviate pain and inflammation for patients suffering from rheumatism. It contains coumarin, alkaloids, triterpenes and volatile oils. It has been also demonstrated that administration of *Radix Toddaliae Asiaticae* has potential and therapeutic effect on collagen induced arthritis, contributing to improved management of rheumatoid arthritis patients [17].

In this way, all over the world, mainly in Brazil, that presents a wide biodiversity, it has been study various species with proven anti-inflammatory [18] as well as analgesic properties [19], been these approaches important in the arthritis rheumatoid therapeutic. An example is the the ethanolic extract of *Lychnophora trichocarpha* Spreng. is used in Brazilian folk medicine to treat bruise, pain and inflammatory diseases. Its ethanolic extract and some of bioactive compounds may be promising agents for the treatment of gouty arthritis since they possesses both anti-hipericemic and anti-inflammatory properties [20].

The search for bioactive components from folk medicine is an important aspect to determine compounds that could act in the treatment of inflammation and pain. The use of extracts from plants, with standardized and proven action could benefit all people due to lower cost, while that would yield the discovery of new compounds of therapeutic interest or prototypes that could allow the synthesis of molecules with potential interest in industries pharmaceutical, mainly focused of therapeutic of rheumatoid arthritis.

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