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REVIEW ARTICLE

Siddha Medicines as a Source of Treatment in Arthritis - A Review.

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ABSTRACT

Arthritis is a chronic inflammatory disease that affects several parts of the joints including cartilage, synovium of tendons and muscles. Worldwide, musculoskeletal disorders represent a global threat to healthy ageing, and are ranked as the second most common cause of disability. Though conventional treatment options for this condition have improved in terms of effectiveness, the use of non-steroidal anti-inflammatory drugs (NSAIDs) like etoricoxib, disease modifying anti-rheumatic drugs (DMARDs) like methotrexate, sulphasalazine, leflunomide, hydroxychloroquine, and corticosteroids like prednisolone, methylprednisolone have all been associated with adverse effects. Because of this reason, patients suffering from chronic musculoskeletal disorders are likely to seek alternative methods for symptomatic relief and are amongst the highest users of complementary and alternative medicine. Therefore, development of new and more powerful drugs with fewer side effects is needed. Large numbers of studies reporting the use of herbal drugs for arthritis, this is the first study reporting the use of Siddha compound formulations in clinical trial and pre-clinical trial. This review includes Siddha compound formulations having analgesic, anti- inflammatory, anti- arthritic, immuno-modulatory activity.

KEYWORDS

Siddha medicine, Arthritis, Herbal medicine, Analgesic, Anti-inflammatory, Anti-arthritic.

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INTRODUCTION

The prevalence of the non-communicable diseases (NCD) is dramatically increasing in Lower and middle income countries. The 2010 Global Burden of Disease (GBD) study reported that musculoskeletal diseases accounted for 19.2% of all years lived with disability (YLDs) in Lower and middle income countries. Significantly contributing to the global disability burden associated with the musculoskeletal system are arthritis diseases. Arthritis, specifically osteoarthritis, is a significant contributor to global disability burden, and the YLDs attributable to osteoarthritis have increased by 75% from 1990 to 2013, indicating this disease as a growing problem internationally[1].Osteoarthritis (OA) is a disease of cartilage degradation, which results pain in major joints, especially in knee joint. Globally OA ranks eighth in all diseases and covers around 15% proportions among all musculoskeletal problems. Clinical symptoms and radio-diagnosis are the basis of diagnosis used for OA characterization. India has higher proliferative rate of OA among world and expected to be at top rank in chronic diseases till 2025. Andhra Pradesh has highest prevalence among India. In Andhra Pradesh and Bihar, exceptionally males are highly affected than females. In Indian impact, nearly 80% of population shows OA among the patient who claimed for knee pain, out of which approximately 20% reported incapability in daily activities and around 11% need peculiar care (Hinman RS et al, 2002; Ringdahl E et al, 2011). Approximately 40% population of more than 70 years shows OA, in which nearly 2% have severe knee pain and disability. A study accompanied in the urban and rural areas of district Visakhapatnam, Andhra Pradesh represent 64% morbidity of several types among study population, out of which musculoskeletal disease were most common with 34% morbidity in rural areas while 41% in urban areas (Srinivas PJ et al, 2014) . Another study conducted in costal Population of Andhra Pradesh, reported knee OA in 68% of (72% male and 59.5% female) 59.5% female) patient complaining with joint pain (Supradeep C et al, 2013)[2]. Rheumatoid arthritis (RA) affects about 0.92% of adult population in India. Early diagnosis and aggressive therapy can usually prevent permanent disability. This, unfortunately, does not happen in many cases. There are about 20-40 new cases per Lac population each year and the disease occurs more frequently in females[3]. Siddha system of medicine is primordial system of medicine practiced in southern part of the India. In Siddha, arthritis symptoms and signs are correlated with keelvayu, there are 10 types of keelvayu are classified in Siddha. Osteoarthritis is correlated with azhal keelvayu, rheumatoid arthritis is correlated with valiazhal keelvayu. In this review an attempt is made to scrutiny the Siddha compound formulations having analgesic, anti-inflammatory, antiarthritic, immunomodulatory activity.

METHODOLOGY

Google scholar, pubmed were used for data search. Anti-inflammatory, analgesic, immunomodulatory, anti- arthritic, Siddha medicines were used as a keywords.

Ghawte SA et al, conducted a clinical trial on 60 patients, to estimate safety and clinical efficacy of single drug, Withania somnifera L. Dunal for the management of rheumatoid arthritis. Group A (test group) were treated with Powder of Withania somnifera 7gm twice a day. Group B (placebo group) were treated with Powder of coded drug (SWM-2) 7 gm twice a day. After using this formulation in Group A, patients showed a considerable relief in symptoms and decrease in functional lequesne score as compared to Group B. After completion of the study, raised leucocytes count and ESR value also decreased significantly ($p<0.0001$) in Group A as compared to Group B.[4]

Velpandian V et al, conducted a study to investigate the efficacy and safety of Siddha drug Gowri Chinthamani Chendooram (GCC) in the treatment of osteoarthritis (Keel Vayu). Fifty patients of either sex were selected for clinical trials and were given a dose of 100 – 200 mg thrice a day Thirikadugu Choornam with sufficient honey after meals. The duration of the treatment depended on the severity from 30 – 60 days. Baseline Vas pain assessment score was 59.08±5.21 (Mean±SD). After the trial drug GCC treatment for one month, the mean ± SD change in the VAS score was 16.82±4.75 (Mean±SD) which indicated that there was extremely significant ($p <0.0001$) improvement[5]

Ram Krishna Rao M et al conducted a study entitiled "The clinical efficacy of "Kodasuri veeravaippu" (a sidhha formulation) in patients affected by the disease 'Keelvayu' (Arthritis)". 'Kodasuri veeravaippu' was given 130 mg bid with honey to the 50 patients in Arignar Anna Siddha Hospital, Chennai.

Table 1: Siddha Compound formulations used for arthritis

Intervention	Diseases/ Activity	Study type
Withania somnifera	Rheumatoid arthritis	Clinical trial
Gowri Chinthamani Chendooram (GCC)	Osteoarthritis	Clinical trial
Kodasuri veeravaippu	Osteoarthritis	Clinical trial
Seenthil chooranam	Rheumatoid arthritis	Clinical trial
Karpoora Chindhamani Mathirai Mannen-naikalavai thylam	Rheumatoid arthritis	Case study
Kodasuri Veeravaippu	Anti-inflammatory	Animal study
Milagaranai Ver Chooranam	Acute and chronic Anti-inflammatory	Animal study
Kanthagaparpam	Anti-arthritic activity	Animal study
Kalpamurtam	Antioxidant, Immunomodula-tory	Animal study
Karpoora Chindhamani Mathirai	Analgesic, Anti-inflammatory	Animal study
Appalakaram	Acute and chronic Anti-inflammatory	Animal study
Changan ilai kudineer	Analgesic, Anti-inflammatory	Animal study
Pooraparpam	Analgesic, Antipyretic, Anti-inflammatory	Animal study
Sangu parpam	Anti-inflammatory	Animal study
Triphala	Anti-arthritic activity	Animal study
Arumuga chendooram (AC)	Anti inflammatory	Animal study
Amukkara choornam	Anti inflammatory	In-vitro study
Amukkara choornam, Thirikadugu choornam, Eladi choornam	Antioxidant, Anti-inflammatory	In-Vitro Study
Ashwathi chooranam'.	Anti-inflammatory	In-Vitro Study

Among 50 patients treated in outpatient wing 80 % were scored good response, and 20 % got fair response to the medicine. In IP Out of 10 patients 8 patients responded well. [6] Singh S. et al conducted a study on siddha medicines in mangement of Vali Azhal Keel Vayu (Rheumatoid arthritis). 20 patients of either sex were selected for a clinical trial of 48 days. 2gm of Seenthil chooranam with lukewarm water and 10 drops of Serankottai nei with hot milk were taken orally, twice daily.

Out of 20 patients, 85% of the patients showed a significant reduction in joint pain and swelling and have a good improvement in their joint movements. The data were analyzed statistically and the result showed significant ($p<0.05$) improvement in the treatment of Vali Azhal Keel Vayu [7]

Meena R et al, conducted a study entitiled "Treatment of UthiravathaSuronitham (Rheumatoid Arthritis) with a Siddha Compound Formulation - A Case Study"

A 53 year old lady diagnosed as Uthiravathasuronitham was treated with Siddha medicines Karpoora Chindhamani Mathirai and MannennaiKalavai Thylam. After 45 days of treatment, the swelling was completely reduced in all the joints. The rheumatoid factor turned to be negative (RAfactor-negative) and CRP-negative). There was significant decrease in ESR- 1/2hr- 8, 1hr-20[8]

Krishna Rao MR et al conducted a study, anti-inflammatory property of Kodasuri Veeravaippu was studied on rats by inducing Carrageenan induced paw edema and cotton pellet induced granuloma. Diclofenac sodium was administered orally at a dose of 5 mg/kg to Wistar strain rats which were positive control group. To the negative control group Normal saline 5 ml/kg was given orally. The results clearly indicate that siddha preparation, Kudasuri Veeravaippu should be used as an effective anti- inflammatory drug which gave better results compared to diclofence sodium[9].

Karthikeyan A et al, conducted a study to validate Analgesic, acute and chronic anti-inflammatory activity of Milagaranai Ver Chooranam at the doses of 100 mg/kg and 200 mg/kg body weight in experimental animals (Rodents). MVC 100 and MVC 200 significantly inhibited pain, carrageenan induced paw oedema and reduced the weight of cotton pellet granuloma. These effects are more significant at the dose of 200 mg compared to MVC 100mg dose level which showed the dose dependent activity of MVC[10].

Parthiban p et al, conducted a study to validate anti-arthritic efficacy of herbomineral formulation kanthagaparpam (kp) in animal models. The anti-arthritic activity of kp (in doses of 25 mg/kg and 50 mg/kg of body wt.) was evaluated using the complete freund's adjuvant (cfa) induced arthritis models. Diclofenac sodium (45 mg/kg body wt.) was used as the standard drug in all the models. Significant ($p<0.05$) decrease in mean paw edema level of treated group compare to control. Also significant ($p<0.05$) decrease in body weight of treated group compare to control. Significantly inhibit the progression of the arthritis in animal models[11]Arulkumaran S et al, conducted a study to investigate the antioxidant and immunomodulatory activities of Kalpaamurtha (KA). Antioxidant activity of KA was determined by using ferric thiocyanate and thiobarbituric acid methods. KA showed higher antioxidant activity when compared with vitamin E (α-tochoperol), a well -known antioxidant. Immunomodulatory activities on humoral and cellular immunity were studied by heamagglutination (HA) titre, delayed type hypersensitivity (DTH) and phagocytic index. The current study shows that KA is effective at the dosage level of 200 mg/kg body weight were significantly induced immunomodulatory activity in a dose dependant manner[12].

Meena R et al, conducted a study on Karpoora Chindhamani Mathirai was subjected to preclinical toxicity studies and for analgesic, anti-inflammatory and antipyretic effects in rats. The results are comparable to Diclofenac sodium (5gm/ kg/po). Karpoora Chindhamani Mathirai also exhibited significant antipyretic and analgesic activity[13]

Karthikeyan Karu et al, conducted a study on the single drug appalakaram for evaluation of acute anti-inflammation by carageenan induced rat hind paw oedema method and chronic inflammation by cotton pellet granuloma method. In these pharmacological evaluations, the drug appalakaram possess mild acute and good chronic anti-inflammatory effect[14].

Vinutha T et al conducted a study, Anti-inflammatory activity on changan ilai kudineer using carrageenan-induced paw edema method with dose of 100mg/kg and 200mg/kg in rats. The percentage reduction of paw volume against Carrageenan inuced paw oedema was more than 50% and the analgesic activity was also in a significant levels[15]

Kabilan N. et al conducted in vivo evaluation of analgesic, antipyretic and anti-inflammatory potential of Siddha formulation Natural and Synthetic Pooraparpam in rodents. The analgesic activity were evaluated through thermal (Eddy's hot plate test) and mechanical method (Tail clip method) of pain induction in mice, whereas antipyretic activity by yeast induced pyrexia in rats. On the other hand, anti-inflammatory activity evaluated by carrageenan and cotton pellet induced inflammation in rats. Both the activity was compared with a standard reference drug Indomethacin 20 mg/Kg and Paracetamol 150mg/kg. The result obtained from the study clearly demonstrates that the Siddha formulations Natural and Synthetic Pooraparpam has promising analgesic, anti-inflammatory and antipyretic activity in tested animals[16]
V Murugan et al, conducted a study entitiled Anti-inflammatory screening of sangu parpam. Nine healthy albino rats were taken and divided into three groups each consisting of 3 rats. First group was kept as control by giving distilled water of 2ml/100gm body weight.

To the second group, the standard drug (Ibuprofen) of 20mg/100gm body weight and to the third group, the test drug Sangu Parpam 1ml/100gm of body weight was given Sangu parpam possesses 27.8 % chronic Anti-inflammatory effect in rats. [17].

Kalaiselvan S et al conducted a study to determine the anti-arthritic effect of triphala in arthritis-induced rats. For comparison purpose, the non-steroidal anti-inflammatory drug indomethacin was used. The levels activities of lipid peroxidation (~41.5%), glycoproteins (hexose ~43.3%, hexosamine ~36.5%, and sialic acid ~33.7%), lysosomal enzymes (acid phosphatase ~52.4%, b-galactosidase ~22.9%, N-acetyl b-glucosaminidase ~22.1%, and cathepsin-D ~27.7%) were found to be decreased and the antioxidant status (SOD ~75.6%, CAT ~62.7%, GPx ~55.8%, GST ~82.1%, and GSH ~72.7%) was ~ increased in the paw tissues of triphala-treated arthritic rats. In addition, the inflammatory mediator levels in serum (TNF-a ~75.5%, IL-1b ~99%, VEGF ~75.2%, MCP-1 ~76.4%, and PGE2 ~69.9%) and in paw tissues (TNF-a ~71.6%, IL-1b ~75.5%, VEGF ~55.1%, MCP-1 ~69.1%, and PGE2 ~66.8%) were found to be suppressed[18]

V. Elango et al conducted a study on Arumuga chendooram (AC) for anti-Inflammatory evaluation. Arumuga chendooram (AC) was given at the doses of 03, 06 and 10mg/kg of body weight in experimental animals. Anti inflammatory activity was evaluated by Carrageenan induced paw edema in rats. Indomethacin (3 mg/Kg body weight) was employed as standard drug. The Arumuga Chendooram at 500mg/kg (body weight) possesses potential anti-inflammatory activity at 2 hrs as compared to other doses and nearest to the standard. [19]

Singh S. et al, conducted a study to analyze the anti-inflammatory activity of Amukkara chooranam In-vitro. Maximum percentage inhibition of about 70.89% was observed at 500 µg/ml when compare to that of the Diclofenac sodium, a standard anti-inflammatory agent with the maximum inhibition 94.74% at the concentration of 100 µg/ml. [20] Rajalakshmi P et al conducted a study to evaluate the antioxidant and anti-inflammatory properties of aqueous extract of Amukkara choornam, Thirikadugu choornam, Eladi choornam and Thiripala choornam. Thiripala choornam has six folds higher level of total phenolic content (1248 mf GAE/100 g) when compared to other formulations (190.42 – 199.78 mg GAE/100 g).

Similarly, Thiripala chooranam exhibited promising antioxidant activity in terms of radical scavenging potential against DPPH (IC-50: 156 mg/L), superoxide (IC -50: 2303 mg/L), hydrogen peroxide (IC-50: 294 mg/L) and hydroxyl radical (IC-50: 587 mg/L) and anti-inflammatory activity (IC-50: 24 mg/L)[21]

Sathya M et al, conducted a study entitled Anti-inflammatory screening of 'Ashwathi chooranam'. The ability of the test drug to lower the tissue nitrite levels are also evident through the concentration ranging from 635, 542, 513µgm in 10, 50 & 100µgm /ml concentrations. These concentrations are much lower than the concentration of the control which 722µgm[22].

CONCLUSION

Here we have lot of study shows the efficacy of Siddha medicine in anti-arthritic, Anti-inflammatory, analgesic, immune-modulatory activity in animal models but only few studies in clinical trial. To explore Siddha System of medicine it is necessary to do more clinical trials. This review will give a definite resource for the development of more potential Anti-arthritic drugs.

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CONFLICT OF INTEREST

There are no conflict of interest.

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