

TO EVALUATE THE ANTI-ARTHRITIC AND IMMUNOMODULATORY ACTIVITY OF HYDROALCOHOLIC AND METHANOLIC EXTRACT OF QUISQUALIS INDICA LINN IN RATS

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Introduction:

RHEUMATOIDARTHRITIS:

Arthritis or Joint inflammation is an auto invulnerable problem described by torment, solidness, synovial expansion, irritation, ensuing obliteration like distortion of joints or annihilation of ligament and bone. Its incidence varies with age. It affects women more often than men. It is a synovial joint inflammation caused by an immune-mediated response. Since anti-inflammatory drugs do not inhibit T-cell and B-cell-mediated responses, they are not anti-arthritis. Rheumatoid arthritis is not a hereditary condition. Some individuals, according to researchers, have genes that make them more vulnerable to the disease. Rheumatoid arthritis does not always occur in people who have these genes. People with these genes will not automatically develop rheumatoid arthritis. The genes are normally activated by a "trigger," such as an infection or an environmental influence. The immune system reacts inappropriately when the body is exposed to this cause. The immune system starts to develop substances that threaten the joint instead of defending it.. This is what may lead to the development of rheumatoid arthritis. It is an autoimmune disease, which means that the immune system of the body attacks healthy tissues by accident. These cytokines cause adjacent articular cartilage synovial fibroblasts and chondrocytes to secrete enzymes that destroy proteoglycan and collagen, causing tissue destruction. The release of numerous cytokines and inflammatory mediators causes the synovial to proliferate and spread, which is known as pannus. The next step is fibrosis, which results in a loss of joint mobility. This stage is known as asankylosis.

Objectives:

Diagnosis of Rheumatoid arthritis:

The diagnosis of rheumatoid arthritis is primarily clinical. The typical presentation is polyarticular, with pain, stiffness, and swelling of multiple joints in a bilateral, symmetric pattern. A minority of patients present with oligoarticular asymmetric involvement.⁵ The onset is usually insidious, with joint symptoms emerging over weeks-months and often accompany by anorexia, weakness, or fatigue. Patients usually note morning stiffness lasting more than an hour. Commonly involved joints are the wrists, proximal interphalangeal, metatarsophalangeal, and metatarsophalangeal joints; with distal interphalangeal joints and spinal joints usually spared. Typical examination findings include swelling, boggy, tenderness and warmth of, with atrophy of muscles near, the involved joints. Weakness is out of proportion to tenderness..

Results:

Effect of Hydroalcoholic and Methanolic extract of Quisqualisindica on Formaldehyde induced arthritis is shown in Table 3.1.1. The assessment made on the 10th day showed that, treatment with hydroalcoholic extract (low dose 100 mg/kg, high dose 200 mg) and methanolic extract (low dose 100 mg/kg, high dose 200 mg) significantly reduced ($P < 0.01$) the swelling in the injected (left) hind paw as compared to Diclofenac sodium treated group. On 2nd day onwards Diclofenac sodium showed significantly reduction in paw edema. Effect of hydroalcoholic and methanolic extract showed much similar effect on 9 and 10 day. The anti-arthritis activity was evaluated by using Complete Freund Adjuvant induced arthritis model in wistar albino rats. The assessment made on the 21st day showed that, treatment with hydroalcoholic and methanolic extract significantly reduced ($P < 0.01$) the swelling in the injected (right) hind paw as compared to Indomethacin treated group. On the 21st day the % inhibition of paw oedema exhibited by low dose hydroalcoholic, high dose hydroalcoholic, low dose methanolic, high dose methanolic extract were 36.29, 44.28, 37.38, 46.09 respectively; while Indomethacin treated animals showed maximum % of inhibition of paw oedema 49.01 on 21st day.

Conclusion:

The pharmacological screening included evaluation of anti-arthritis and immunomodulatory activity of hydroalcoholic and methanolic extract of Quisqualisindica at the dose of 100 mg/kg, 200mg/kg in rats with CFA-induced arthritis, formaldehyde induced arthritis, carbon clearance test and Cyclophosphamide induced myelosuppression. In injected (right) paw, low dose and high dose hydroalcoholic extract exhibited 36.29 %, 44.28 % inhibition and low dose, high dose methanolic extract exhibited 37.38 %, 46.09 % inhibition respectively against CFA induced paw edema on 21st day as compared to indomethacin (49.01 %). Administration of QuisqualisIndica was found to increase phagocytic activity by stimulation of macrophages, total WBC and differential leukocytes count. The phytochemicals analysis revealed the presence of polyphenols and flavonoids. The polyphenols have potent anti-inflammatory activity by inhibiting prostaglandin synthesis. So anti inflammatory activity of Hydroalcoholic and methanolic extract of Quisqualisindicacan be attributed to bradykinin and PG synthesis inhibition property of polyphenols. The study also reveals that, hydroalcoholic and methanolic extract of QuisqualisIndica (HEQI) has Immunostimulants activity which strongly affected immune system seems to be bioactive fraction of this plant.