

Title: Ammodaucus Leucotrichus Seed Extract as a Potential Therapy in Animal Models of Rheumatoid Arthritis Induced by Complete Freund Adjuvant and Chicken Cartilage Collagen

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Abstract: This study assessed the efficacy of an *Ammodaucus leucotrichus* seed extract to treat rheumatoid arthritis in rat models of this disease. Rheumatoid arthritis was induced in rats using two methods: immunization with 100 µL of Complete Freund Adjuvant (CFA) and immunization with 100 µL of a 3 mg/ml solution of type II collagen (CII) from chicken cartilage. The therapeutic potential of the extract was assessed at different doses (150, 300, and 600 mg/kg/day for 21 days in the CII-induced arthritis model and for 14 days in the CFA-induced arthritis model) and compared with methotrexate (MTX; 0.2 mg/kg for the same periods), a commonly used drug for rheumatoid arthritis treatment in humans. In both models (CII-induced arthritis and CFA-induced arthritis), walking distance, step length, intra-step distance and footprint area were improved following treatment with the *A. leucotrichus* seed extract (all concentrations) and MTX compared with untreated animals. Both treatments increased the serum concentration of glutathione and reduced that of complement C3, malondialdehyde and myeloperoxidase. Radiographic data and histological analysis indicated that cartilage destruction was reduced already with the lowest dose of the extract (100 mg/kg/dose) in both models. These results show the substantial antiarthritic potential of the *A. leucotrichus* seed extract, even at the lowest dose, suggesting that it may be a promising alternative therapy for rheumatoid arthritis and joint inflammation. They also emphasize its efficacy at various doses, providing impetus for more research on this extract as a potential therapeutic agent for arthritis.

Keywords: Rheumatoid arthritis Ammodaucus leucotrichus seed extract Anti-arthritic activity Oxidative stress biomarkers Experimental rat models

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