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Syringic acid, a phenolic compound attenuated arthritis by inhibition of cytokines in complete freund's adjuvant induced arthritis in rats

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Aim & Objective: To evaluate the anti-arthritic potential of syringic acid in Freund's Complete Adjuvant induced arthritis in rats and to study the underlying mechanism.

Methods: Rheumatoid arthritis was induced in male Wistar rats by sub-plantar injection of 0.1 ml of Complete Freund's Adjuvant into right hind paw on day 0. The treatment of syringic acid (25, 50 and 100 mg/kg) and standard drug, indomethacin (1 mg/kg) was started from day 0 and continued up to day 21. The body weight, paw volume, paw thickness and arthritic index were determined on day 0, 3, 7, 10, 14, 18 and 21. On day 22, rats were sacrificed and hematological, biochemical, anti-oxidant parameters, the thymus and spleen indices and cytokine level were estimated. Histopathological examination of the injected paw of the rat was performed.

Results: Syringic acid showed significant ($p<0.05$) reduction in paw volumes at doses 50 mg/kg and 100 mg/kg. Syringic acid showed significant reduction in tumor necrosis factor-α (TNF-α) and interleukin-6 (IL-6) levels in the serum, while increase in the anti-oxidant and biochemical parameter. The histopathology showed reduced cellular infiltration, synovial line thickening and joint erosion of cartilage.

Conclusion: The restoration of the levels of TNF-α and IL-6 to normal may be contributing to the anti-arthritic potential of syringic acid and could be a promising therapeutic alternative in the treatment of rheumatoid arthritis.

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