

## Study the Effect of Lipoid Acid as a Protective Against Rheumatoid Arthritis Through Diminishing Pro-inflammatory Markers and Chemokine Expression

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**Abstract :** One of the most severe complications of Rheumatoid arthritis is delayed recovery. lipoic acid possesses antioxidant, hypoglycemic, and anti-inflammatory activity. In the present study, the effects of lipoic acid were investigated on the key mediators of Rheumatoid arthritis, namely, CD4+CD25+ T cell subsets, GITR expressing cells, CD4+CD25+Foxp3+ regulatory T (Treg) cells, T-helper-17 (Th17) cells and pro-inflammatory cytokines Interleukin-1 $\beta$  (IL-1 $\beta$ ), Interleukin-6 (IL-6) and Tumor Necrosis Factor-  $\alpha$  (TNF- $\alpha$ ) through flow-cytometry and qPCR analyses. Lipoic acid-treated mice showed a significant decrease in Rheumatoid arthritis, the frequency of GITR-expressing cells, and Th1 cytokines (IL-17A, TNF- $\alpha$  and Interferon-  $\gamma$  (IFN- $\gamma$ )) compared with positive and negative controlled mice. Lipoic acid treatment also downregulated the mRNA expression of the inflammatory mediators compared with the Rheumatoid arthritis mouse model and untreated mice. The number of Tregs was also found to be significantly upregulated in lipoic acid-treated mice. Our results were confirmed by the histopathological examination. This study showed the beneficial role of lipoic acid in promoting a well-balanced tool for the therapy of Rheumatoid arthritis.

**Keywords :** lipoic acid, inflammatory markers, rheumatoid arthritis, qPCR

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