

ASSESSMENT OF ANTI-INFLAMMATORY EFFECT OF ALPHA - TOCOPHEROL ON INDUCED RHEUMATOID ARTHRITIS IN RATS

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INTRODUCTION

Rheumatoid arthritis (RA) is a chronic, autoimmune disease characterized by persistent, progressive and destructive synovial inflammation that leads to irreversible functional damage and permanent disability. It has been shown that Adjuvant-induced arthritis (AiRA) in rats, in many respects, shares significant amount of similarities with RA in humans and it is widely used as a model for detection and evaluation of compounds with anti-inflammatory or anti-rheumatic activity.

The aim of the study was to assess the anti-inflammatory properties of α -tocopherol (α -T) in the treatment of RA using AiRA animal model.

MATERIALS AND METHODS

Study was designed as a prospective, experimental study in which we used eighteen adult male Wistar albino rats, reared in standard laboratory conditions with food and water provided *ad libitum*. Experimental animals were divided randomly into three groups (6 rats in each group): rheumatoid arthritis group (iRA group), arthritis treated with α -T group (α -T group) and control group (CG). RA was induced by a single intradermal (i.d.) injection into the base of the tail with 0,1 mL Complete Freund's adjuvant (CFA) composed of heat-killed and dried *Mycobacterium tuberculosis* suspended in mineral oil. Alpha-T was administrated for 30 days, on a daily basis, by oral gavage. The blood samples from all groups were collected on the 1st, 17th and 30th day of experiment from the tail vein for the purpose of determining the level of IL-17. Disease progression was monitored by measuring arthritis score (AS), mobility score (MS), paw thickness (Pt), local hyperthermia (Lh) and body mass (Bm). Animals were sacrificed by the ether vapors. Serum IL-17 concentration was determined with the use of commercially available quantitative sandwich enzyme-linked immunosorbent assay (ELISA) according to the manufacturers instructions at the Department of Biochemistry, Faculty of Medicine, University of Sarajevo.

Obtained data were statistically analyzed using SPSS version 13.0 (SPSS Inc., Chicago, IL, USA).

RESULTS

There was no statistically significant difference in serum values of IL-17 between individual measurements during experimental period in iRA group of animals. In the α -T group, we noted a linearly decreases of serum IL-17 levels during the experimental period, but differences between individual measurements were not statistically significant. In iRA group we observed statistically significant decreases in value of Bm ($p=0.017$) and MS ($p=0.003$) on the 30th experimental day compared to the 1st experimental day. Alpha-tocopherol treated rats expressed statistically significant decrease ($p=0.035$) in AS on the 30th day of experiment in comparison with the 1st day of the experiment.

References

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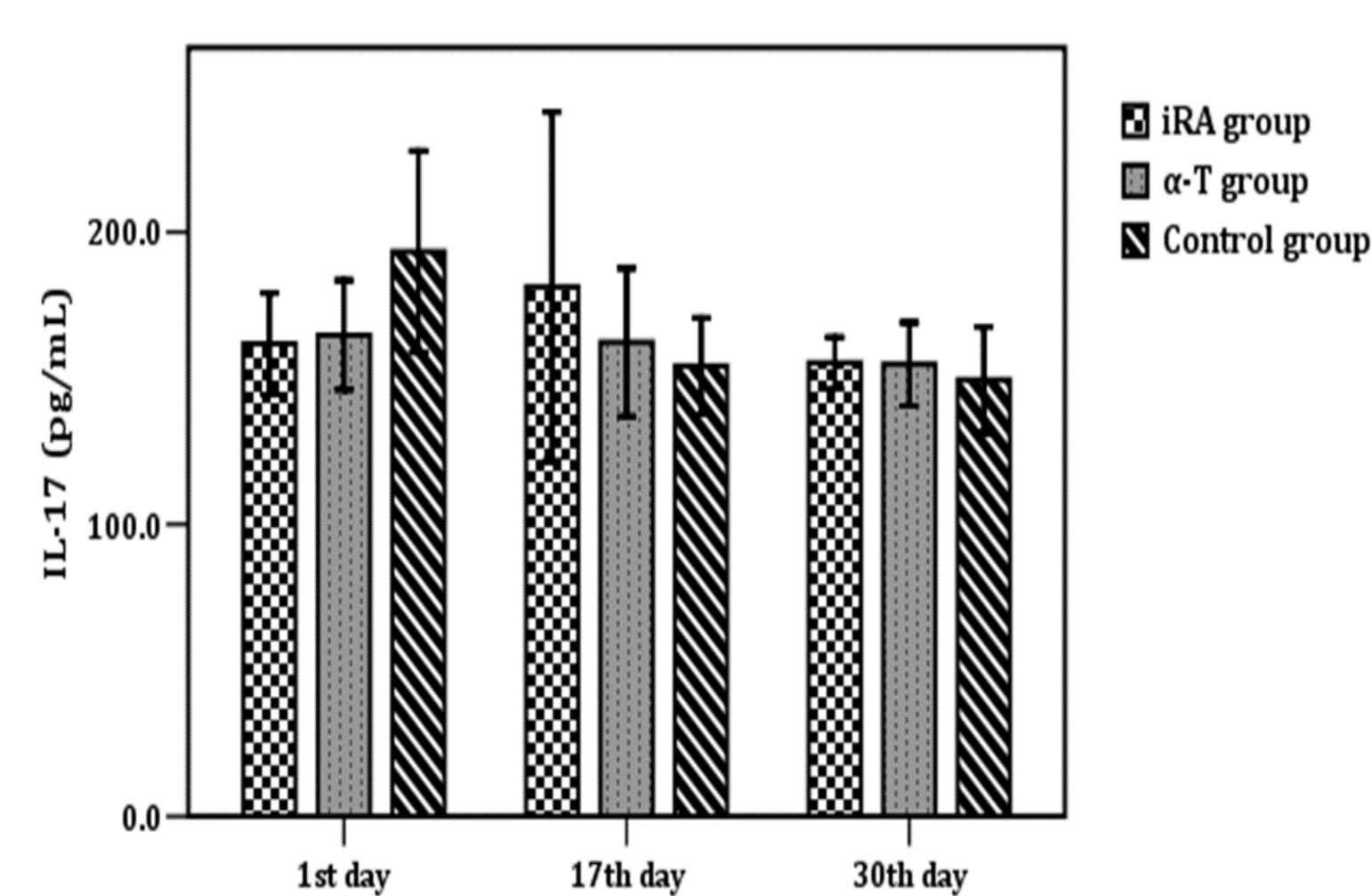


Figure 1. Differences in serum concentration of the IL-17 between experimental groups on the 1st, 17th and 30th day of experiment

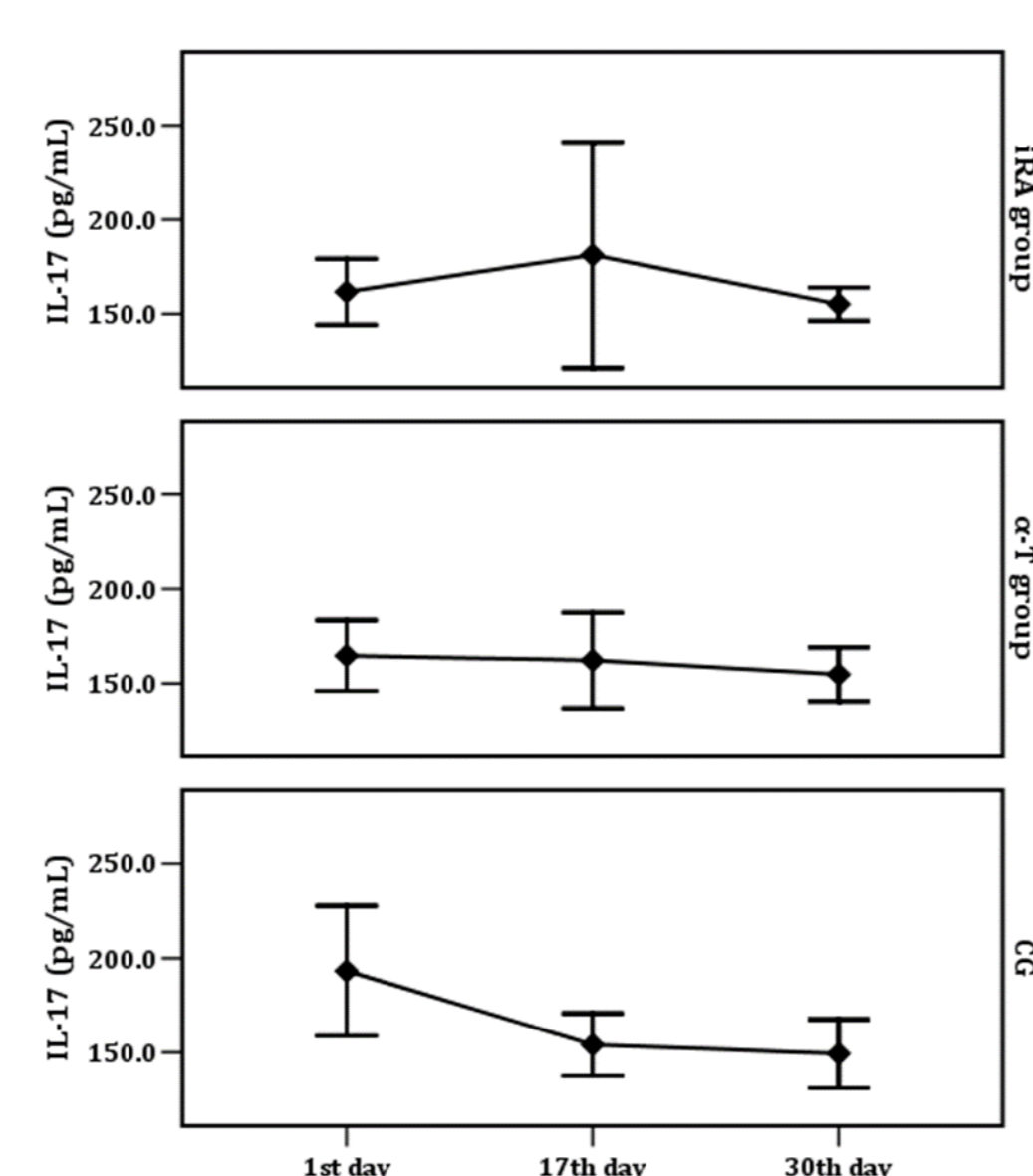


Figure 2. Differences in serum concentration of IL-17 between the 1st, 17th and 30th day of the experiment in each experimental group

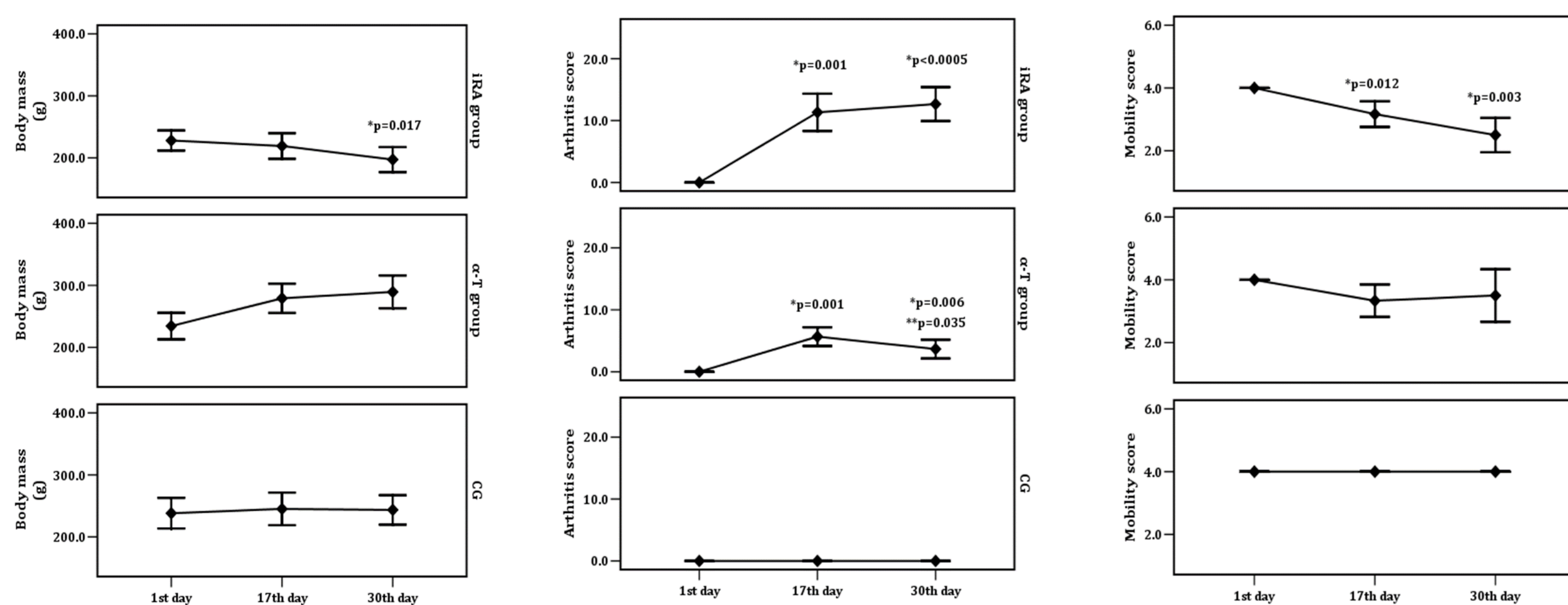


Figure 3. Differences in body mass between the 1st, 17th and 30th day of the experiment in each experimental group

Figure 4. Differences in arthritis score between the 1st, 17th and 30th day of the experiment in each experimental group

Figure 5. Differences in mobility score between the 1st, 17th and 30th day of the experiment in each experimental group

CONCLUSION

Taken together, our results indicate that α -tocopherol may act as an anti-inflammatory treatment agents, targeting several different points of the inflammatory process in RA.