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Molecular expression IFN- γ at the protein level and its comparison with T lymphocytes proliferation with quercetin induction in collagen induce arthritis

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Introduction: Interferon gamma is one of the most important regulative indices of the body's immunity system and cellular modifier, in most of the inflammatory diseases such as rheumatoid arthritis, lupus, MS the cytokine balance Th1/Th2 undergoes broad changes that are related to disease pathogenesis. Quercetin is of flavonoids family and has a modular function on the immune system. In this research, the effect of Quercetin was studied on arthritis pathogenesis due to collagen induction using IFN- γ expression assay and multiplication of T lymphocytes as an immunity cellular index.

Materials & Methods: Male Balb/C mice were divided into 3 groups, the first group of BCII and CFA were immunized at the rate of 100 μ g at hypodermis of toe and second group on 28th day after the first immunization in the tail norm with BCII and IFA and third group on the 42nd day received the second booster, the entire injections were at the rate of 100 μ g. The arthritis rate due to collagen was measured with wood experiment. Each of the three immunized groups (Prime/Booster1/Booster2) whose toe had inflamed were treated with Quercetin and 14 days after the last immunization in each group the rats were subjected to the spinal cord injury, their spleen was extracted and 2×10^6 /cell cellular suspension was prepared in RPMI1640 medium with 10% BCS. IFN- γ measurement and T lymphocyte proliferation rate was evaluated via Elisa, LTT and Brdu method respectively, the results were assessed via One Way ANOVA statistical analysis.

Results: The results showed that among the groups treated with Quercetin in each group in the first injection in relation to the control groups a significant difference exists at $P < 0.05$ and they had achieved this difference to increase IFN- γ expression and cellular proliferation rate with both Booster1 and Booster2 methods in relation to the prime group a significant difference was observed at $P < 0.05$.

Conclusion: The research showed that several types of natural and synthetic flavonoids have an ability to regulate and modify the immune system and establishment of Th1/Th2 balance from the pre-inflammatory cytokines has an inhibitory effect, even quercetin as a flavonoid can increase the proliferation of T lymphocytes and IFN- γ that is cellular immunity index and can be introduced as a pharmaceutical candidate in the treatment of diseases such as rheumatoid arthritis.

Biography

Maryam Tabarestani Emrani is pursuing Master of Science in Genetics at Islamic Azad University of Tehran. One of the diseases that have been increased dramatically in Iran in past decades is Rheumatoid Arthritis (RA). Due to lack of study and information about RA, she decided to choose this topic for her MS project, which is "The study of proinflammatory cytokine IL-6 expression via inducing propolis combination in CIA disease".

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