

ABSTRACT

Rheumatoid arthritis is the most common joint disease of autoimmune origin. It is accompanied by inflammatory conditions that lead to irreversible changes in the joints, their deformities ending with permanent disability. Treatment of the disease involves routine regimens, surgical, as well as pharmacological treatment, which is necessary for advanced forms. Glucocorticoids play an important role in the therapeutic intervention in the course and progression of the disease. In spite of their anti-inflammatory effect, which is a key to improving the condition of the patient, they have a number of side effects in the long term-use. In this study, we have focused on the impact of these drugs on microRNA expression changes in arthritic patients treated with pulsed doses of glucocorticoids. MicroRNAs are nowadays widely studied due to their possible use as biomarkers in monitoring disease progression and the effect of treatment.

MiRNA expression analysis was performed by quantitative real-time PCR array of 754 miRNAs with reverse transcription using stem-loop primers that allow amplification of short sequences that microRNAs are. Data analysis revealed 29 miRNAs differentially expressed at the significance level $p \leq 0.05$, 14 miRNAs were at significance level $p \leq 0.025$ (respectively 7 miRNAs at $p \leq 0.005$ level) in the glucocorticoid-treated group and, respectively, 21 miRNAs differentially expressed at significance level $p \leq 0.05$, of which 15 miRNA at significance level $p \leq 0.025$, respectively 10 miRNA at $p \leq 0.01$ (or 6 miRNA at $p \leq 0.002$) when comparing the active disease with the control group. For example, miR124a, miR-211, miR-1255B and RNU44, which, due to consistent trends and quantitatively comparable expression values, seem to be associated with disease activity. On the contrary, miR-9, miR-21, miR-1247 and miR-423-5P could be related to the presence of autoimmune disease or chronic inflammation. However, the quantitative extent of the gene expression changes was too low for any biology-related conclusions and requires further investigation and validation.

Key words: Rheumatoid arthritis, glucocorticoids, microRNA