MODULATION OF IL 10 CYTOKINE SECRETION OF REGULATORY B LYMPHOCYTES BY EPIGENETIC MODIFICATION OF GENOME

Kalina Nikolova-Ganeva[1], Vasil Vasilev[2], Boriana Deliyska[2] and Andrey Tchorbanov[1,3]

[1]*Laboratory of Experimental Immunology, Department of immunology, Institute of Microbiology, Bulgarian Academy of Sciences, Sofia, Bulgaria*

[2]*Department of Nephrology, University Hospital "Tsaritsa Yoanna – ISUL", Medical University, Sofia, Bulgaria*

[3]*National Institute of Immunology, Sofia, Bulgaria*

Aim: Systemic lupus erythematosus is a severe autoimmune disease caused by a combination of genetic and environmental factors. A number of studies have demonstrated the influence of epigenetic mechanisms in the development of autoimmune diseases. Regulatory B cells (Bregs) are of particular importance for the control of autoimmune diseases – deficiency in Bregs can lead to pathological autoimmunity. As changes in the population of regulatory B-cell have been identified in patients with systemic lupus, their number is a determining factor for the proper functioning of the immune system. The aim of the study is to investigate the influence of additional methylation on the function and on the number of the human Bregs.

Materials and Methods: PBMCs from lupus patients were isolated and cultured in the presence of different concentrations of folic acid. The percentage of IL10-producing Bregs as well the methylation of B lymphocytes were determined by flow cytometry.

Results: 10 lupus patients and 10 healthy donors participated in the study. Two of the patients showed an increase in the IL10 producing Bregs after incubation with folic acid. No differences were observed in the samples of healthy volunteers.

Conclusions: A number of research studies confirm the involvement of epigenetic changes in the etiology of systemic lupus. Numerous scientific developments point to the role of folic acid as s major modulator of gene expression. Modulation the development of systemic lupus by epigenetic pathways would be a novel scientific approach for modification of genetic defects at molecular level.