variant genotype for Apal and TaqI was associated with a higher risk of fibromyalgia in SLE patients.

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AB0078

LIPID IMMOBILIZATION AS A METHOD TO OBTAIN ANTIGENIC NANO-OBJECTS

O. Rusanova¹, O. Emelyanova^{1,2}, N. Emelyanov². ¹Federal State Budgetary Institution «Research Institute of Clinical and Experimental Rheumatology named after A.B. Zborovskiy», 1, Bonrropad, Russian Federation; ²Federal State Budgetary Educational Institution of Higher Education «Volgoorad State Medical University» of the Ministry of Healthcare of the Russian Federation, 2, Bonrropad, Russian Federation

Objectives: Objective of the study is to research the effect of emulsion polymerization on active sites of cardiolipin antigen determinant in antiphospholipid syndrome (APS) in patients with systemic lupus erythematosus (SLE).

Methods: Having integrated antigen nanoobjects we developed immobilized magnetocontrollable antigen nanosystems and put them to an evaluation test. The nanosystems are polyacrylamide granules with a built in antigen. To obtain stable immobilized multi-use biopharmaceuticals with targeted properties (shape, particle diameter, pore size, density) we used a modified version of emulsion polymerization method using polyacrylamide carrier gel. This method permitted a greater sorptive capacity, preserving the antigen in maximum native state, and opened up the possibility of controllable modification of nanoobjects. Cardiolipin was used as the antigen in question.

Results: Following the method described above we performed sorption of anti-cardiolipin antibodies from blood plasma of SLE patients who showed clinical presentations of antiphospholipid syndrome. Blood serum from 10 apparently healthy individuals served as control. The level of cardiolipin antibodies was determined before and after sorption by indirect solid phase immunoenzyme method. In the eluate we estimated total protein by Lowry method. In vitro testing showed that the obtained antigen nanosystems based on immobilized cardiolipin could effectively remove cardiolipin antibodies from whole blood of SLE patients with clinical presentations of APS to achieve the values of healthy individuals (before sorption cardiolipin antibodies 0.328 ± 0.028 ; after sorption 0.059 ± 0.017 ; $p < 0.001$; sorption capacity 8.00 ± 0.390 mg/ml).

Conclusion: The method of emulsion polymerization with consideration to hydrophobic and hydrophilic properties of lipid molecules permits obtaining and modifying biomolecules with certain properties, in a controlled fashion.

Disclosure of Interests: None declared

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AB0079

ENDOTHELIAL FUNCTION IN SYSTEMIC LUPUS ERYTHEMATOSUS PATIENTS: IMPACT OF CAFFEINE CONSUMPTION ON ENDOTHELIAL PROGENITOR CELLS

V. Orefice¹, F. Ceccarelli¹, C. Barbatì¹, E. Putro¹, C. Pirone¹, F. R. Spinelli¹, C. Alessandri¹, F. Conti¹. ¹Lupus Clinic, Sapienza University of Rome, Department of Clinical Internal, Anesthesiological and Cardiovascular Sciences, Rome, Italy

Background: As widely demonstrated, circulating endothelial progenitor cells (EPCs) could be considered biomarkers of endothelial dysfunction. Their frequency and function varied in systemic lupus erythematosus (SLE) patients, with a significant association with subclinical atherosclerosis¹. Caffeine, one of the most widely consumed products in the world, seems to interact with multiple components of the immune system by acting as a non-specific phosphodiesterase inhibitor². In terms of cardiovascular disease (CVD), data from the literature showed a U-shaped association between habitual coffee intake and CVD³. In this view, Spyridopoulos et al. demonstrated a significant improvement in mature endothelial cells and EPCs migration in relation to coffee consumption in coronary artery disease both in mouse models and in patients⁴. Finally, caffeine seems to play a positive effect on SLE disease activity status, as demonstrated by the inverse association between its intake and SLE Disease Activity Index 2000 (SLEDAI-2K) and the serum levels of inflammatory cytokines⁵. At the best of our knowledge, there are no data about the effect of caffeine on cardiovascular risk in SLE patients.

Objectives: The aim of this study was to evaluate the possible role of caffeine intake on endothelial function in SLE patients, by evaluating its effect on circulating EPCs.

Methods: We performed a cross-sectional study enrolling SLE patients, fulfilling the revised 1997 ACR criteria. According with the protocol study, we excluded patients with history of smoking, CVD, chronic kidney failure, dyslipidaemia, and/or diabetes. At recruitment, the clinical and laboratory data were collected and disease activity was assessed using the SLEDAI-2k. Caffeine intake was evaluated using a 7-day food frequency questionnaire, previously employed in SLE cohort⁵. At the end of questionnaire filling, blood samples were collected. EPCs were isolated from peripheral blood mononuclear cells (PBMC) by a flow cytometry analysis and they were defined as early EPCs CD34+KDR+CD133+ cells and late EPCs CD34+KDR+CD133-, expressed as a percentage within the lymphocyte gate.

Results: We enrolled 19 patients (F:M 18:1, median age 45 years, IQR 15; median disease duration 240 months, IQR 168). In this cohort, we observed a mean±SD SLEDAI-2k value of 1.3 ± 3.3 and the most frequent disease-related feature was joint involvement (73.7%). Concerning treatment at the time of enrolment, the majority of patients were receiving treatment with hydroxychloroquine (78.9%) and seven with glucocorticoids (36.8%). The median intake of caffeine was 163 mg/day (IQR 138) and we used this value as cut-off to categorize SLE patients in 2 groups: group 1 (N=10, caffeine intake ≤ 163 mg/day) and group 2 (N=9, caffeine intake > 163 mg/day). Patients with less intake of caffeine showed a significantly more frequent history of lupus nephritis ($p=0.03$), haematological manifestations ($p=0.0003$) and anti-dsDNA positivity ($p=0.0003$). Moving on EPCs, a positive correlation between caffeine intake and EPCs percentage was observed ($p=0.04$, $r=0.4$) (Figure 1A). Moreover, patients with more caffeine intake showed higher levels of early EPCs ($p=0.02$) (Figure 1B).

Conclusion: This is the first report analysing the impact of caffeine on EPCs frequency in SLE patients. We found a positive correlation between its intake and both early and late EPCs percentage, suggesting a caffeine influence on endothelial function in SLE patients. Nonetheless, these results support the possible impact of dietary habits on autoimmune diseases.

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Figure 1. A. Correlation between KDR+CD34+ cells and daily caffeine intake
B. KDR+CD34+CD133+ cells percentage in group 1 (N=10, caffeine intake ≤ 163 mg/day) and group 2 (N=9, caffeine intake > 163 mg/day)

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AB0080

ALTERED CONCENTRATIONS OF DIFFERENT SMALL EXTRACELLULAR VESICLE POPULATIONS IN PLASMA OF PATIENTS WITH ANTIPHOSPHOLIPID SYNDROME

U. Stok^{1,2}, A. Shephard³, S. Cucnik^{1,2}, S. Sodin-Šemr^{1,4}, P. Zigon^{1,4}. ¹University Medical Centre Ljubljana, Department of Rheumatology, Ljubljana, Slovenia; ²University of Ljubljana, Faculty of Pharmacy, Ljubljana, Slovenia; ³Nanoview Biosciences, Research and Development, Malvern, United Kingdom; ⁴University of Primorska, Faculty of Mathematics, Natural Sciences and Information Technologies, Koper, Slovenia

Background: Antiphospholipid syndrome (APS) is a systemic autoimmune disorder characterized by thrombosis, obstetric complications, and the presence of antiphospholipid antibodies (aPL) that cause endothelial injury and thrombophilia [1]. Extracellular vesicles (EVs) are involved in various thrombotic disorders [2], including APS [3, 4], and therefore may influence the prothrombotic status of APS patients. One of the hallmarks of activated endothelium is the expression of adhesion molecules, such as ICAM-1 (CD54) and E-selectin (CD62E), that play a key function in the interactions with leukocytes and platelets.

Objectives: To determine the level of total tetraspanin (CD81/CD63/CD9)-positive vesicles and specific EV populations (CD54- and CD62E-positive EVs) in plasma from APS patients.

Methods: Whole blood was collected from 4 APS patients and 3 healthy blood donors (HBDs) and processed to obtain platelet-depleted plasma. The size and concentration of EVs were determined using ExoView platform (NanoView