Objectives: The main goal of this study is to characterize the JAK-STAT signalling pathway activation in untreated early arthritis patients.

Methods: Peripheral blood mononuclear cells were isolated from blood samples of untreated early arthritis patients (<12 months of disease duration). Frequency, phenotype and STAT phosphorylation (by mean fluorescence intensity, MFI) levels were evaluated on T and B cells, monocytes and dendritic cells (DC) by flow cytometry. A group of age and sex-matched healthy individuals was included for comparison.

Results: The frequency of total CD19+ B cells was similar between patients and controls, although patients presented a significantly decreased level of pre-switch memory B cells when compared to controls. No significant differences were observed in naïve, post-switch memory, double negative B cells, transitional B cells and plasmablasts. The frequency of total CD3+ T cells, CD14+ monocytes and DCs was similar, however patients had significantly decreased levels of plasmacytoid DCs. In addition, we found that STAT3 phosphorylation levels were significantly increased in B cells and DCs in early arthritis patients. The STAT1, STAT5 and STAT6 phosphorylation levels were similar in T and B cells, monocytes and DCs, when compared with the control group.

Conclusion: Alterations in the frequencies of circulating memory B cell subsets and pDCs, but not in T cells and monocytes, are found in untreated early arthritis patients when compared to healthy controls. Changes in STAT3 phosphorylation MFI levels observed in B cells and DCs from early arthritis patients in comparison to controls support an early activation of JAK-STAT pathway in the initial phase of arthritis and a role of these cells in disease pathogenesis.

Acknowledgements: We would like to thank the Flow Cytometry Facility of Instituto de Medicina Molecular João Lobo Antunes for their technical support and also Clinical Research Center of the Lisbon Academic Medical Center for their nurse support.

Disclosure of Interests: None declared, Rita A. Moura: None declared, Vasco C Romão: None declared, Joao Eurico Fonseca Grant/research support from: Abbvie., Isabel Alcobia: None declared, Rita A. Moura: None declared.

DOI: 10.1136/annrheumdis-2023-eular.5096

THEAFLAVIN ALLEVIATES COLLAGEN-INDUCED ARTHRITIS IN MICE BY DECREASING REACTIVE OXYGEN SPECIES AND PRO-INFLAMMATORY CYTOKINES

Keywords: Rheumatoid arthritis

W. N. Huang1,2,4, C. C. Lin5,6,7,8, 1National Chung Hsing University, College of Medicine, Taichung, Taiwan, Republic of China; 2Ling-Tung University, Department of Business Administration, Taichung, Taiwan, Republic of China; 3National Yang Ming Chiao Tung University, School of Medicine, Taipei, Taiwan, Republic of China; 4Taichung Veterans General Hospital, Division of Allergy, Immunology and Rheology, Taichung, Taiwan, Republic of China; 5National Chung Hsing University, Institute of Biomedical Science, Taichung, Taiwan, Republic of China; 6Taichung Veterans General Hospital, Department of Medical Research, Taichung, Taiwan, Republic of China; 7National Chung Hsing University, Rong Hsing Research Center for Translational Medicine, Taichung, Taiwan, Republic of China; 8National Chung Hsing University, Ph.D. Program in Translational Medicine, Taichung, Taiwan, Republic of China

Background: An autoimmune disease that causes inflammation and bone and cartilage deterioration is rheumatoid arthritis (RA). In the pathogenesis of RA, oxidative stress and pro-inflammatory cytokines are important factors. The main polyphenol in black tea, theaflavins (TFs), has been used medically to treat a variety of inflammatory illnesses by reducing inflammation and reactive oxygen species (ROS).

Objectives: The medications available to treat RA have a variety of side effects. The current study was designed to assess the anti-arthritis properties of theaflavin in a mouse collagen-induced arthritis model.

Methods: In order to induce arthritis in DBA/1 mice, type II collagen was administered intradermally. From days 21 through days 42, different doses of theaflavin (50 and 100 mg/kg/day) were orally administered. To determine the effect of theaflavin on collagen-induced arthritis, histological analyses were conducted. In addition, the generation of reactive oxygen species (ROS), nitric oxide, and the activities of enzymatic antioxidants (superoxide dismutase, glutathione peroxidase, catalase, and glutathione reductase) in the joint homogenate of mice were examined. The levels of TNF-α, IL-6, and IL-1β were also measured by ELISA to detect inflammation.

Results: Our results showed anti-oxidant and anti-inflammatory effects of theaflavin in arthritic mice. Histopathological studies corroborated the anti-arthritis properties of theaflavin. The compound was found to be effective in lowering ROS and nitric oxide levels while increasing enzymatic antioxidant levels. Theaflavin therapy also reduced TNF-α, IL-6, and IL-1β levels.

Conclusion: In mice with arthritis, theaflavin was successful in reducing inflammation and oxidative stress. These results suggest that theaflavin may be used in conjunction with other treatments to manage RA.

Figure 1. TF ameliorated the severity of arthritis in CIA mouse models. (a) Representative photographs depicted the swollen and reddened rear paws of four animal groups 42 days following the initial vaccination. (b) Accumulated clinical arthritis scores in each leg ranged from 0 to 4 and were evaluated every three days using a visual scoring system. The changes in body weight of normal control or CIA mice treated with or without TF or vehicle were recorded every three days till day 42. (c) TNF-α, IL-6, and IL-1β inflammatory cytokine protein levels in arthritic mouse hind paw tissues. On day 42, CIA in DBA/1 mice hind paw homogenates were taken from the normal control, vehicle-treated, or TF-treated (50 or 100 mg/kg) groups of mice. The cytokine profiles were measured using ELISA according to the techniques given. *p < 0.01 and **p < 0.005 showed statistically significant differences in two-way ANOVA compared with the vehicle-treated CIA group.

REFERENCES: NIL.

Acknowledgements: NIL.

Disclosure of Interests: None Declared.

DOI: 10.1136/annrheumdis-2023-eular.5276

IMBALANCE OF MONOCYTE/MACROPHAGE POLARIZATION IN PERIPHERAL BLOOD AND SYNOVIAL FLUID OF RHEUMATOID ARTHRITIS PATIENTS

Keywords: Innate immunity, Rheumatoid arthritis

S. Soldano1, E. Gotelli1, P. Montagna1, R. Campitelli1, A. Sulli1, V. Smith2,3, M. Cutolo4,1. 1University of Genova, IRCCS Policlinic San Martino Hospital, Laboratory of Experimental Rheumatology and Academic Division of Clinical Rheumatology, Department of Internal Medicine, Genoa, Italy; 2Ghent University Hospital, Department of Rheumatology, Ghent, Belgium; 3Ghent University, Department of Internal Medicine, Ghent, Belgium

Background: Macrophages strongly contribute to the pathogenesis of rheumatoid arthritis (RA), initiating the inflammatory response, the joint damage, but also may promote the resolution of inflammation and the restoration of tissue immune-homeostasis [1,2]. This seems to be related to an unbalanced immunological response mediated by macrophages through their polarization into ‘‘classically’’ and ‘‘alternatively’’ activated phenotypes (M1 or M2) [3,4]. However, little is known about the M1 and M2 phenotype of their circulating precursors (monocytes) in the peripheral blood (PB) and the synovial fluid (SF) of RA patients.

Objectives: To characterise the polarization status (M1 and M2) of PB and SF monocytes of RA patients together with their distribution in the monocyte subsets by flow cytometry (FC).

Methods: Nineteen RA patients not yet treated with biological DMARDs (mean age 62±14 years), who fulfilled the 2010 ACR/EULAR classification criteria for RA and treated in accordance with EULAR recommendation, as well as 19 age-matched healthy subjects (HSs) were enrolled after signed informed consent.

AB0080

Disclosure of Interests: None declared, Rita A. Moura: None declared.