Serbian Biochemical Society

President: Marija Gavrović-Jankulović
Vice-president: Suzana Jovanović-Šanta
General Secretary: Isidora Protić-Rosić
Treasurer: Milica Popović

Proceedings

Editor: Ivan Spasojević
Technical support: Jelena Korać Jačić
Cover design: Zoran Beloševac
Publisher: Faculty of Chemistry, Serbian Biochemical Society
Printed by: Colorgrafx, Belgrade

Serbian Biochemical Society
Eleventh Conference

Scientific meeting of an international character

September 22nd and 23rd, 2022, Novi Sad, Serbia

"***Amazing Biochemistry"***

The effect of a gallic acid derivative on encephalitogenic cells

Goran Stegnjaić[1], Milica Lazarević[1], Antonios D. Tsiailanis[2], Thomas Antoniou[2], Vasileios K. Gkalpinos[2], Neda Djedović[1], Suzana Stanisavljević[1], Mirjana Dimitrijević[1], Miljana Momčilović[1], Djordje Miljković[1], Andreas G. Tzakos[2,3], Bojan Jevtić[1]

[1]*Department of Immunology, IBISS, University of Belgrade, Belgrade, Serbia*
[2]*Section of Organic Chemistry & Biochemistry, Department of Chemistry, University of Ioannina, Ioannina, Greece*
[3]*Institute of Materials Science and Computing, University Research Center of Ioannina (URCI), Ioannina*

[*]*e-mail: goranstegnjaic1995@gmail.com*

This study aimed to evaluate the effects of a synthetic gallic acid (GA) derivative in the central nervous system (CNS) autoimmunity, *i.e.* in experimental autoimmune encephalomyelitis (EAE), an animal model of multiple sclerosis. EAE was induced in DA rats by injection of autologous spinal cord homogenate, with a gallic acid derivative being applied subcutaneously (20 mg/kg, day 7-22 post-immunization). GA derivative ameliorated EAE. Cells from lymph nodes draining the site of immunization (DLNC), isolated in the inductive phase of the disease, and spinal cord immune cells (SCIC), isolated at the peak of disease, were exposed to GA derivative *in vitro*. Encephalitogenic cytokines, interferon (IFN)-γ and interleukin (IL)-17, were decreased in SCIC and DLNC under the influence of GA derivative. The proportion of IL-17-producing $CD4^+$ T cells was reduced in SCIC (flow cytometry). Treatment of microglial BV2 cells with GA derivative led to inhibition of NO, IL-6, and tumor necrosis factor release. These results imply that the synthesized GA derivative is a potent immunomodulator, able to ameliorate EAE. Its effects on the CNS autoimmunity are related to the inhibition of encephalitogenic T cells and macrophage/microglia activity in our study.

Acknowledgements

This study was supported by Ministry of Education, Science and Technological development of the Republic of Serbia No. 451-03-9/2021-14/200007; Hellenic Foundation for Research and Innovation "First Call for H.F.R.I. Research Projects to support Faculty members and Researchers and the procurement of high-cost research equipment grant" (No. 991).