IMMUNOLOGY AT THE CONFLUENCE OF MULTIDISCIPLINARY APPROACHES

ABSTRACT BOOK

Institute for Biological Research "Siniša Stanković" National Institute of Republic of Serbia
University of Belgrade

Immunological Society of Serbia

IMMUNOLOGY AT THE CONFLUENCE OF MULTIDISCIPLINARY APPROACHES

ABSTRACT BOOK

Hotel Mona Plaza Belgrade

December 6th-8th, 2019

Belgrade, 2019

PUBLISHERS

Institute for Biological Research "Siniša Stanković" - National Institute of Republic of Serbia, University of Belgrade
Immunological Society of Serbia

For publishers
Dr Mirjana Mihailović, director of the Institute for Biological Research "Siniša Stanković" - National Institute of Republic of Serbia, University of Belgrade
Dr Nada Pejnović, president of the Immunological Society of Serbia

EDITORS
Tamara Saksida
Suzana Stanisavljević
Đorđe Miljković

Printed by: Interprint, Kragujevac
Circulation: 200
ISBN 978-86-80335-12-4

This publication is printed by support of the Ministry of Education, Science and Technological Development, Republic of Serbia

Poster presentation

INFLAMMATION AND INSULIN SENSITIVITY IN THE LIVER OF FRUCTOSE-FED *Mif* DEFICIENT MICE

Ljupka Gligorovska[1], Ana Teofilović[1], Nataša Veličković[1], Danijela Vojnović Milutinović[1], Sanja Kovačević[1], Gordana Matić[1] and Ana Djordjevic[1]

[1]*Institute for Biological Research "Siniša Stanković"- National Institute of Republic of Serbia, University of Belgrade, Serbia*

Introduction: The macrophage migration inhibitory factor (MIF) is a key pro-inflammatory mediator involved in the regulation of energy metabolism and metabolic inflammation in the liver. Fructose overconsumption has been previously associated with development of low-grade inflammation characterized by elevated production of pro-inflammatory cytokines and activation of mitogen-activated protein kinase (MAPK) signaling pathway. The inflammatory response can disrupt insulin signaling and genetic deletion of *Mif* may contribute to the development of systemic insulin resistance, as well. The aim: The aim of the present study was to elucidate combined effects of *Mif* deficiency and fructose-enriched diet on metabolic inflammation and insulin sensitivity in the liver of male mice. Methods: Wild type (WT) and *Mif* deficient ($MIF^{-/-}$) C57Bl/6J mice were used to analyze the effects of 9-week 20% fructose-enriched diet on indicators of insulin sensitivity and markers of metabolic inflammation (tumor necrosis factor α (TNFα), interleukin (IL)-1β and IL-6). Deregulation of Akt signaling pathway was used as hallmark of hepatic insulin resistance. Also, the protein levels of extracellular signal-regulated kinase (ERK), c-Jun N-terminal kinase 1 (JNK) and p38 were analyzed. Results: *Mif* deficient animals exibited elevated expression of IL-1β and IL-6 in the liver, regardless of the diet regime, while hepatic TNFα was unchanged in all animals. On the other hand, both total and phosphorylated ERK and JNK protein levels were decreased in all fructose-fed mice. In the same animals, impaired hepatic insulin signaling, revealed by decreased pAkt and total Akt protein levels, was observed. Conclusion: Although, *Mif* deficiency led to upregulation of pro-inflammatory cytokines, fructose diet did not aggravate this effect. On the other hand, insulin signalling was diminished by fructose feding independently of *Mif* deficiency.