



FENS

Regional Meeting

Belgrade, Serbia, July 10–13, 2019

ДНС
SNS Друштво за неуронауке Србије
Serbian Neuroscience Society



National Neuroscience
Society of Romania



Neuroscience Society
of Turkey



ABSTRACT BOOK

1. PLENARY LECTURES
2. SYMPOSIA
3. SPECIAL INTEREST SYMPOSIA
4. NANO SYMPOSIA
5. HISTORY POSTERS
6. POSTER SESSION
7. BRAIN AWARENESS WEEK POSTERS

Editor: Andjelka Isakovic

Associate Editor: Sonja Misirlic Dencic

Assistant Editors: Tatjana Nikolic, Milica Velimirovic Bogosavljevic

ISBN 978-86-917255-3-2

Publisher: Serbian Neuroscience Society, Belgrade

Graphic design & pre-press Aleksandar Mandić



Thursday, July 11, 2019

13:45-15:00

Room Atlantic 1
Room Atlantic 2

POSTER SESSION 1

P055

MECHANISM UNDERLYING EFFECTS OF FISH OIL SUPPLEMENTATION IN PRESYMPTOMATIC STAGE OF ALZHEIMER DISEASE IN 5XFAD MICE

Milena Jović, Natasa Lončarević-Vasiljković, Sanja Ivković, Desanka Milanović, Selma Kanazir

Department of Neurobiology, Institute for Biological Research "Siniša Stanković", University of Belgrade, Belgrade, Serbia

milena.jovic@ibiss.bg.ac.rs

Aims: Alzheimer's disease (AD) is the most prevalent type of dementia in elderly, triggered by multiple factors such as amyloid plaques, neurofibrillary tangles and neuroinflammation. The use of supplements with omega-3 fatty acids has been associated with reduced risk and lessened AD pathology. The purpose of this study was to elucidate the mechanisms underlying effects of short-term fish oil (FO) supplementation in presymptomatic stage of AD in 5xFAD mice.

Methods: Three-month old female 5xFAD mice received FO (100 μ l/animal/day) via oral gavage during the period of 3 weeks. Western blot and immunohistochemical analysis were used to detect changes in pathological features of AD in cortex of 5xFAD mice. AmiloGlo was used to visualize plaques. Amyloid beta (A β) peptide, dystrophic neurites (DNs), microglia/macrophages and CX3CR1/CX3CL1 were detected by anti-A β 42-, anti-SMI31-, p-Tau-, anti-Iba-1-, anti-CX3CR1 anti-CX3CL1 antibodies, retrospectively. Immunostaining was observed by confocal microscopy. Quantification was done by Image J and Image Quant software.

Results: The present study shows that short-term FO supplementation applied in presymptomatic stage of AD, alters the behaviour of microglia/macrophages prompting them to establish a physical barrier around amyloid plaques. This barrier significantly suppresses DN formation through the reduction of both A β content and tau hyperphosphorylation. Moreover, the short-term FO treatment suppresses CX3CR1/CX3CL1 axis, interaction between microglial cells and neurons, which represents one of possible mechanisms for altered microglial/macrophage motility and colocalization around plaques.

Conclusion: Our findings suggest that FO consumption may play an important role in modulating microglial response and ameliorating the AD pathology in presymptomatic stage of Alzheimer's disease.

Acknowledgements: This study was supported by the grant no. 173056 from the Ministry of Education, Science and Technological Development, Republic of Serbia.