W Kazana et al., J Alzheimers Dis Parkinsonism 2018, Volume 8
DOI: 10.4172/2161-0460-C7-054

Yolkin polypeptide complex from hen egg yolk—isolation, characterization and neuroprotective activity

W Kazana[1], **A Polanowski**[2], **A Zambrowicz**[2] and **A Zabłocka**[1]
[1]Hirszfeld Institute of Immunology and Experimental Therapy—Polish Academy of Sciences, Poland
[2]Wrocław University of Environmental and Life Sciences, Poland

Age-related diseases are the most frequent ones among diseases diagnosed in the populations. Due to the increase of this phenomenon, the study on substances, which can inhibit neurodegenerative processes, is beginning to have special prominence. Hen eggs have been recognized as an excellent, natural and easily bio-renewable source of substances with a well-documented biological activity. One of them is yolkin, a group of peptides accompanying IgY in hen's egg yolk plasma, of a molecular weight from range 1 to 35 kDa. Yolkin possess immunoregulatory and neuroprotective activity, indicating its potential function in inhibition of the progression of dementia in the course of neurodegenerative disorders. Yolkin also mitigates behavioral symptoms of aging and improves cognitive learning and memory in young and old rats. Its neuroprotective effect was observed in PC12 cells treated with toxic amyloid protein Aβ1-42 and on the nerve fibers of NGF-differentiated PC12 cells treated with aggregated Aβ1-42. It was also shown that yolkin stimulates both PC12 neuron-like cells and human whole blood cells to release significant amounts of brain-derived neurotrophic factor (BDNF) in dose- and time-dependent manner. BDNF regulates neuronal survival and outgrowth, influences synaptic plasticity and is a key molecule in the maintenance of memory storage in the hippocampus. Moreover, level of BDNF mRNA or protein are dramatically decreased in parts of the brain affected by neurodegenerative processes. In conclusion, yolkin thanks to its beneficial properties, can be considered as a potential therapeutic agent in the treatment of neurodegenerative diseases.

Biography

W Kazana is a second-year PhD student at the Hirszfeld Institute of Immunology and Experimental Therapy, PAS in Wrocław. She graduated in biotechnology in Wrocław University of Science and Technology (MSc thesis awarded). Her research focuses on neuroprotective and immunoregulatory properties of yolkin, polypeptide complex isolated from hen egg yolk. She has already presented her preliminary results at NEURONUS conference (poster) and symposium opening Biotechnology: Research and Industrial Applications conference (oral presentation) during this year. She is also one of the co-authors of an article published in Neuropsychiatry (London) (2018) 8(3), 833-842, DOI:10.4172/Neuropsychiatry.1000410.

wioletta.kazana@iitd.pan.wroc.pl

Notes: