COMPARISON OF DNA DAMAGES IN PERIPHERAL BLOOD LEUKOCYTES IN ELDERLY HEALTHY AND ALZHEIMER DISEASE SUBJECTS

B.S. Potparevic¹, L. Zivkovic¹, B.P. Solarovic¹, N. Djelic², V. Bajic³

¹Faculty of Pharmacy, Institute of Physiology, Department of Biology and Human Genetics, ²Faculty of Veterinary Medicine, Department of Biology, University of Belgrade, ³Institute of Biomedical Research, Galenika a.d., Belgrade, Serbia

Introduction: Both ageing and Alzheimer disease (AD) are accompanied by damage and loss of neurons in the central nervous system (CNS). It is assumed that oxidative stress is one of the most important causes of pathological changes, including DNA damage, in the CNS of AD patients. However, a certain level of DNA damage has been found in different non neuronal cell types in the peripheral tissues in AD patients.

Aim: The aim of this study was to examine the degree of DNA damages in the peripheral blood leukocytes of healthy young (mean age±SD:22±1 years), control elderly (74±5 years) and AD (73±6 years) subjects.

Methods: The degree of DNA damage was evaluated in peripheral blood leukocytes by using the Comet test. Each group consisted of 12 subjects of both sexes. One hundred of cells per subject was analyzed and total comet score (TCS) was calculated.

Results: The results revealed that TCS was significantly (P< 0.05) higher in elderly than in young subjects. Highly significant increase (p< 0.001) in TCS was found in AD patients comparing to elderly control subjects.

Conclusions: These results, obtained by a quick, simple and effective method for DNA damage detection, indicate that aging per se is accompanied by DNA damage in peripheral blood leukocytes, whereas this type of cellular damage is much more expressed in AD. It may be concluded that genomic instability is higher in AD than in control elderly subjects and is not restricted only to neurons.