

## **Abstract**

Oxidative stress is the result of an imbalance between the formation of reactive oxygen species and the ability of the body to detoxify these free radicals. As a result of this disbalance, harmful substances, especially peroxides and free radicals, accumulate in the body, resulting in damage of proteins, lipids and DNA leading to total cell destruction and necrosis. For this reason, oxidative stress contributes to the development of many serious diseases including atherosclerosis, many types of cancer, heart failure or neurodegenerative diseases such as Parkinson's disease, multiple sclerosis and Alzheimer's disease.

Alzheimer's disease is a chronic neurodegenerative disease whose risk increases with age. It is an incurable disease affecting an ever increasing number of patient. Early AD symptoms include disorientation, loss of short-term memory, mood swings and problems with expression of thoughts. The causes of AD have not yet been fully clarified but there are speculations about importance of the role of tau-proteins and  $\beta$ -amyloid plaques that form in AD progression. Oxidative stress can also play an important role, and may participate in the development of this disease. This work focuses mainly on the role of oxidative stress in pathophysiology and progression of AD.

Key words: neurodegeneration, oxidative stress, Alzheimer's disease, free radicals, tau proteins,  $\beta$ -amyloids, central nervous system