Special Issue

Aging and Oxidative Stress in Nervous System

Message from the Guest Editor

A vast proliferation of theories and classifications have been proposed to explain the aging process. The most accepted hypothesis of aging is that of oxidative stress, which states that reactive oxygen species (ROS), produced via cellular aerobic metabolism, causes progressive oxidative damage throughout the cell, inducing its degeneration and death. In aerobic cells, mitochondria are the main source of ROS, which act mainly on the closest macromolecules such as the lipids of the mitochondrial membrane, the proteins of their enzymatic systems and, especially, the mitochondrial DNA. The lipids of cell membranes are biomolecules that are highly susceptible to being attacked by free radicals.

The nervous system is highly susceptible to oxidative stress and aging due to its rich chemical composition of polyunsaturated fatty acids, its high metabolic rate and a deficient antioxidant system. This involves a progressive loss of motor, sensory and cognitive functions, which is considered to happen because of the degenerative changes that occur with age. On the other hand, many pathologies of the nervous system occur more frequently as age progresses.

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