Review on oxidative stress and antioxidants in human health

Kumeshini Sukalingam, Kumar Ganesan, Kumar Ponnusamy, Sujit Kumar Sarker
International Medical School, Management and Science University
Sharmila Banu Gani
NKR Government Arts College for Women

Abstract

Reactive oxygen species (ROS) and reactive nitrogen species (RNS) are important in aerobic metabolism of the cell and recognised as in both dangerous and beneficial effects. Electron transport chain (ETC) leakage from mitochondria and excessive incentives of xanthine oxidase produce more ROS generation results in oxidative damage, can leads to lipids, proteins and DNA damage. In contrast, beneficial effects of ROS/RNS take place at very minimum concentrations and involve physiological roles in cellular responses in defence against microorganisms, gene expression, functions of numerous cell signalling pathways, hypoxia and cellular growth. Many research studies clearly stated the role of ROS in many diseases. The body defends itself from the possible damages of ROS, by utilizing antioxidant and non-antioxidant enzymes such as catalase (CAT), superoxide dismutase (SOD), glutathione peroxidises (GPx), glutathione S-transfearse (GST) and glutathione reductase (GSH-R). Many research articles indicated that non-enzymatic antioxidant acquired from diets (vitamin A, C, E and polyphenols) can easily scavenge the ROS. These substances are acting as cofactors for a number of antioxidant enzymes and that can be used by cells for enzymatic antioxidants mechanisms.

Keywords: ROS, RNS, Oxidative stress, Lipid peroxidation, antioxidant enzymes.