



Biomarkers of oxidative stress associated diseases

Message from the Guest Editor

Dear Colleagues,

Stress- and/or age-associated diseases are considered as major socio-economic health problem of the modern society. These include various cardiovascular diseases represented usually by atherosclerosis, degenerative disorders, notably neurodegenerative, metabolic diseases represented by diabetes mellitus, autoimmune disorders, such as rheumatoid arthritis and cancer being the most fearsome of all.

Etiopathogenesis of so various diseases is generally considered to be based on the accumulation of irreparable biomolecular damages that occur over the lifetime of an individual due to harmful effects of various stressors including reactive oxygen species, especially free radicals. Therefore, excessive production of oxygen free radicals and reactive oxygen species, denoted as oxidative stress, is considered to be either crucial factor of their pathogenesis or at least important co-factor that initiates or promotes chain reactions of vicious circle, which turns reversible pathophysiological processes into irreversible diseases.

Typical example of such undesirable oxidative stress events are inflammatory processes that do not serve to defend the organism but are instead progressive and destructively acting against targeted cells or organs leading to systemic diseases. That stands also for metabolic syndrome, which is preconditioning the onset of cardiovascular diseases and diabetes mellitus. In both cases self-catalyzed or enzymatically generated process of lipid oxidation is complementing inflammation eventually generating the end products of lipid peroxidation, reactive aldehydes, which allow chronic persistence and spread of macromolecular damage at the side of the affected tissue or even beyond, after the end of the oxidative stress that initiated the damage

Accordingly, biomarkers of oxidative stress can be unspecific and unreliable, unless well combined with specific biomarkers of particular disease. If analyzed together, they could help better understanding specific etiopathogenesis, that could lead to better prevention and/or therapies of oxidative stress associated diseases. To do that, research on complementarity of specific biomarkers of oxidative stress associated diseases and the biomarkers of oxidative stress is needed to provide functional framework for better understanding of such diseases.

Therefore, the aim of this special issue is to present some of the already gained findings on this complex aspects of pathophysiology and/or pathology of oxidative stress together with genuine research articles that might be on the frontiers of research in the field.

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Guest Editor

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