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Oxidative stress and immune system: A review from the literature

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Most of biological processes are related to the so-called redox reactions, where one or more electrons alone or bound to a proton as hydrogen atom are transferred from a chemical species, i.e. the reducing species, to another chemical species, i.e. the oxidizing species. The transfer of a couple of electrons is related to energy metabolism being: the oxidation linked to the catabolism and to ATP production, and the reduction bound to the anabolism and to ATP expenditure. The transfer of an electron alone is related to the metabolism of the so-called reactive species that are involved in the pathophysiology of stress i.e. the global response of a living organism to internal/environmental demands or pressures (stressors). At molecular level stress response implies also the production of reactive species which main role is to mediate the cell response to endogenous and/or exogenous physical, chemical and biological stressors through a fine-tuning of cell signaling/transduction and inflammatory/immune/toxic responses. Therefore, any disturbance in one-electron transfer reactions can lead to the improper oxidation of target molecules (including lipids, proteins and nuclei acids) and hence to the "oxidative di-stress" or "oxidative stress" as such, an emerging health risk factor that is related to early aging and at least one hundred different diseases, including immune diseases. Oxidative stress does not show any specific clinical picture but can be diagnosed in clinical routine only by means of specific laboratory tests according to the novel approach of Redoxomics.

Biography

Eugenio Luigi Iorio is a Medical Doctor, has done his Doctorate in Biochemical Sciences (PhD), Post-graduated in Clinical Chemistry and specialization in Biochemistry. He is the President of International Observatory of Oxidative Stress (Italy, Greece, Japan). According to his research, the identification and the control of oxidative stress, an emerging health risk factor related to the dysregulation of redox systems, may play a relevant role in the prevention and treatment of life-style related disorders.

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