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An express method for the quantitative judgement of oxidative stress

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An important feature of the living beings in contrast to the non-living matter is their ability to actively protect themselves from the uncontrolled oxidation due to itself during the phylogenesis developed antioxidative system of the organism. The imbalance between the pro- and anti-oxidative processes in an organism leads to the formation of a state named as an oxidative stress. This pathology is observed in many human and animal diseases of different origin and apparently it mediates the process of aging. Timely detection of oxidative stress enables to interrupt it and to prevent the development of undesirable consequences. This talk focuses on the description of the modified method of thermo-initiated chemiluminescence evoked during a decay of azo-compounds in the presence of luminol. The measurements were executed at the self designed appliance. The protruding characteristic of the technology is the possibility to measure the antioxidative effectiveness of water-soluble substances as such as the degree of the oxidative modification of amino acids, proteins, nucleotides and nucleic acids in the same units of calibration. A combination of the antioxidative protection with the degree of the oxidative damage to a biosubstrate on a two-dimensional diagram allows the quantitative judgment of the oxidative stress.

Biography

I N Popov completed his first physics study in the field electronics at the Voronezh State University (Russia) and the second college education in the field medical biology at the Russian State Medical University in Moscow. He obtained his PhD and DSc in Medicine from Humboldt-University. He joined the faculty there in 1977, and in 1991 he established the Research Laboratory for Antioxidative Therapy. The independent Research Institute for Antioxidative Therapy was founded 1994 under his participation and a grant support of the German Federal Ministry of Research and Technology. He is the inventor of the method of the photosensitized chemiluminescence for measurement of antioxidants and the developer of the measuring instruments "Photochem[®]" and "minilum[®]". He has published 70 papers in reputed journals, 14 patents and a book entitled "Handbook of Chemiluminescent Methods in Oxidative Stress Assessment".

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