

Antiossidanti, specie reattive dell'ossigeno e nutrizione

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Antioxidants, reactive oxygen species and nutrition

ABSTRACT: Free radicals and other oxygen-derived species (ROS) are constantly generated in vivo, both by "accidents of chemistry" and for specific metabolic purpose. The reactivity of different free radicals varies, but some can cause severe damage to biological molecules, especially to DNA, lipids and proteins. Oxidative damage to these molecules has been implicated in a wide variety of degenerative diseases such as atherosclerosis and cancer. The human body has powerful mechanisms for defence against free radicals and other reactive oxygen species. Components of both endogenous and exogenous origins contribute to protection, and new data suggests that the various defences are complementary to one another, so, they interact to spare or replace each other. Nevertheless the antioxidant defence systems are not 100% effective, the result is a condition called oxidative stress, that is an imbalance between pro-oxidant factors and antioxidants. Hence, diet-derived antioxidants may be particularly important in slackening cumulative oxidative damage and helping the human body to stay healthier for longer. Vitamin C is an effective scavenger of many oxyradicals in body's aqueous compartments such as blood plasma and cell cytosol. Vitamin E provides antioxidant protection in body's lipid phases, especially by protecting the unsaturated fatty acids of cell membranes and plasma lipoproteins. Carotenoids are also believed to provide antioxidant protection to lipid rich tissues. A variety of minor plant constituents (phytochemicals), such as flavonoids, exhibit antioxidant and free radical scavenging properties in vitro, suggesting a possible protective role in the human body. However, the mechanisms through which these compounds act in vivo are still incompletely understood and many uncertainties persist relative to their bioavailability and metabolic fate in human body. The progress of the studies in this particularly topic will have important repercussions both in the preventive medicine and in clear pathology. The possibility to taking protective components with foods is very important for health human body and even more for ill person. With respect to this, the enteral and parenteral nutrition, as specialized nutrition support during critical illness, will evolve in response to the results of studies regarding to the different antioxidants (exogenous and endogenous) interactions and synergisms. Moreover, will be investigated possible synergisms and antagonisms between natural antioxidants and dietary components, as well as, other substances such as drugs or pharmacological active molecules. (RINPE 2002; 20: 187-96)

KEY WORDS: Reactive oxygen species (ROS), Oxidative stress, Phytochemicals, Antioxidants, Polyphenols, Nutrition

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