Antioxidants accelerates cellular health

Sir

Cell damage caused by free radicals appears to be a major contributor to aging and degenerative diseases of aging such as cancer, cardiovascular disease, cataracts, immune system decline, and brain dysfunction.[1] Overall, free radicals have been implicated in the pathogenesis of at least 50 diseases.[2,3] Fortunately, free radical formation is controlled naturally by various beneficial compounds known as antioxidants. It is when the availability of antioxidants is limited that this damage can become cumulative and debilitating.[4] Reactive oxygen species (ROS) is a term that encompasses all highly reactive, oxygen-containing molecules including free radicals, which includes the hydroxyl radical, the superoxide anion radical, hydrogen peroxide, singlet oxygen, nitric oxide radical, hypochlorite radical, and various lipid peroxides. All are capable of reacting with membrane lipids, nucleic acids, proteins and enzymes, and other small molecules, resulting in cellular damage.[4] To protect the cells and organ systems of the body against ROSs, humans have evolved a highly sophisticated and complex antioxidant protection system. It involves a variety of components, both endogenous and exogenous in origin, that function interactively and synergistically to neutralize free radicals[5] and include nutrient derived antioxidants (Vitamin C and E, beta carotene, and polyphenols), antioxidant enzymes (bilirubin, thiols, ubiquinones, and uric acid), metal-binding proteins (albumin, ceruloplasmin, ferritin, and myoglobin), and numerous other antioxidant phytonutrients (plant-derived substances) present in a wide variety of plant foods. The human body has a multifaceted structure of natural enzymatic and nonenzymatic antioxidant resistance, which counteracts the detrimental effects of free radicals and other oxidants. Defense against free radicals can be improved by sufficient intakes of dietary antioxidants, of which the best studied, are vitamin E, vitamin C, and carotenoids. Substantial data indicate that foods containing antioxidants and possibly in particular the antioxidant nutrients may be of chief significance in disease prevention. Labors should be made to ensure optimum intakes of foods containing these important molecules. There is a need for development in the quality of the diet, especially with respect to increased consumption of fruits and vegetables. However, other strategies, including optimization of food processing, selective fortification of foods, and the use of safe nutritional supplements, may also need to be measured. Antioxidants may be of great benefit in improving the value of life by preventing or postponing the commencement of degenerative diseases. Additional research is needed to explain and broaden scientific understanding of the health effects of antioxidants. Efforts should also be made to communicate to the general public existing information about the magnitude of protective nutrients in fruits and vegetables. Developing functional food that provides bioactive components, such as antioxidants, is an emerging multidisciplinary area in biological health sciences.

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