

An Apple a Day Keeps the Doctor Away

By Jasmine Lew

Bah humbug? Maybe not. Recent research studies have shown that a diet that consists of a healthy helping of anti-oxidant rich foods, such as fruits and vegetables, may be just the thing the doctor ordered! Fruits and vegetables may not be able to prolong the natural lifespan. However, data have shown that fruits and vegetables can improve the quality of life by reducing the risk of chronic old age ailments such as atherosclerosis, cancer, and neurodegenerative diseases such as Alzheimer's disease and Parkinson's disease.

But what are anti-oxidants? And how do they work? The cell is maintained with a fine balance between pro-oxidants, free radicals, and anti-oxidizing systems. The oxygen essential for life contributes to the formation of these free radicals. Free radicals and pro-oxidants contribute to cellular damage by attacking proteins and DNA. The anti-oxidizing systems, such as superoxide dismutase, neutralize these pro-oxidants. As the cell ages, the balance between the pro-oxidants and the anti-oxidizing systems becomes harder to maintain, and the damage to the proteins and DNA becomes more widespread, leading to cell dysfunction and death. An imbalance between these two systems is defined as oxidative stress.

Oxidative stress occurs naturally in all cells, but environmental factors including smoking and dietary carcinogens increase the level of oxidative stress imposed on the cells. Neurodegenerative diseases, such as Parkinson's disease and Alzheimer's disease, are often the result of neuronal death from oxidative stress. Researchers from Southern Methodist University have created a line of fruit flies with an extended lifespan. According to these

researchers, the key anti-oxidant enzymes are superoxide dismutase and catalase. Superoxide dismutase converts oxygen radicals into hydrogen peroxide. In its native form, hydrogen peroxide is a reactive oxygen species that can cause damage. Catalase neutralizes hydrogen peroxide by converting it into oxygen and water. The researchers believe that both catalase and superoxide dismutase work together to combat free radical species. Furthermore, it has been found that fruit flies with elevated levels of both catalase and superoxide dismutase have prolonged life spans. Fruits, vegetables, and dietary supplements rich in Vitamin E and other anti-oxidants are believed by many scientists to improve quality of life by reducing oxidative stress.

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The avoidable environmental sources of pro-oxidants include dietary carcinogens, radiation, and smoking. Currently, dietary supplements with anti-oxidant properties that can be bought over the counter include vitamin E, vitamin C, ubiquinone, lipoic acid, β -carotene, creatine, melatonin, curcumin, and ginkgo biloba. Their use shows a correlation with reduced incidence of cognitive decline and dementia in elderly populations. A properly balanced diet, rich in fruits and vegetables, is believed to be beneficial to a person's health. Fruits and vegetables, which are low in fat and high in fiber, contain several forms of phytochemicals with anti-oxidant activity. Flavinoids, which are particularly potent anti-oxidants, are found in red wine, certain teas, and fruits. Studies have shown that a glass of red wine per day reduces the risk of heart attacks with age. The clinical effectiveness of these dietary supplements remains a highly debated topic, owing to the lack of properly controlled human trials. Anti-aging creams currently being marketed by international cosmetic companies contain extracts from a variety of fruits believed to combat the physical effects of aging.

This doesn't mean that a person who eats nothing but fruits and vegetables will remain young forever. But it does mean that maintaining a healthy diet that includes either dietary supplements with anti-oxidant properties or healthy helpings of fruits and vegetables and avoiding unfavorable environmental factors (for example, smoking and dietary carcinogens) will decrease the possibility of heart disease, atherosclerosis, and neurodegenerative diseases as one ages. ■

