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**FILE: ■Aging
■Antioxidants**

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RE: Countering the Effects of Aging – Focus on Antioxidants

Hunt J. Healthy aging. *Health Supplement Retailer*. Nov. 2005:34-38.

Americans have experienced a 50% increase in life expectancy since the beginning of the 20th century through public health, medicine, and nutrition improvements. Hunt discusses the continuing rise in sales of anti-aging products, linked to desires of aging "baby boomers" (an estimated 75-80 million Americans) to counter the effects of aging, and of youthful consumers to remain healthy and vigorous through preventive measures. The author also talks about the increasing availability of products with demonstrable benefits for age-related disorders. By 2009, the U.S. market for anti-aging products and services is expected to reach nearly \$72 billion.

While "[a]ging itself is not an illness", growing older weakens the body, making it vulnerable to numerous "markedly opportunistic" conditions, e.g. cardiovascular disease, depression, cancer, vision loss, insomnia, memory loss, osteoporosis (OP), enlarged prostate, digestive problems, weight gain, and loss of skin flexibility and plasticity ("wrinkles"). Several degenerative conditions are particularly linked with aging.

Hunt mentions four theories of why aging occurs. "While no single theory is universally accepted, each may account for some aspect of...aging." They include the "wear and tear" theory, attributing aging to the body's eventual inability to repair itself adequately; the neuroendocrine theory, proposing that the hypothalamus loses its ability to regulate hormone activity precisely over time; the genetic control theory, stating that each person has a predetermined "genetic clock" controlled by his or her DNA, which may, however, be influenced by diet and lifestyle as well as by exposure to environmental biohazards; and the free radical theory, proposing that free radicals, mostly oxygen-derived, unstable molecules produced by normal biological processes as well as by environmental factors, when not neutralized by corresponding antioxidants, "inflict...heavy cellular damage, which causes cell death and dysfunction and eventually, disease."

The free radical theory has been well researched, and is of particular interest to health retailers. Antioxidants are an enormous part of annual \$20+ billion U.S. dietary supplement sales. Hunt discusses some popular antioxidant products.

A diet high in plant sources of antioxidants is important in healthy aging, since food nutrients "are often highly bioavailable and can act synergistically to increase...health benefits." For example, garlic (*Allium sativum*) has several antioxidants, including allicin, β -carotene, quercetin, selenium, and zinc. Garlic may protect against stomach and colorectal cancers. Green tea (*Camellia sinensis*) contains the antioxidant flavonoids gallic acid (GC), epigallocatechin (ECG), epicatechin (EC), and epigallocatechin gallate (EGCG), all of which exhibit abilities to combat free radicals. EGCG may protect against certain cancers and against Alzheimer's disease. Green foods, such as seaweed, sea vegetables (e.g., chlorella [*Chlorella pyrenoidosa*], spirulina [*Spirulina platensis*], kelp [*Fucus vesiculosus*; *F. pyrififerus*]), young grain shoots (from *Triticum* spp.), broccoli (*Brassica oleracea* v. *italicaca*), cabbage (*Brassica oleracea* v. *capitata*), and other green, leafy vegetables contain antioxidant carotenoids, vitamins, and the enzyme superoxide dismutase (SOD). SOD, naturally produced by the body, neutralizes superoxide radicals, which cause fat oxidation. A patented form of SOD, GliSODin™, (P.L. Thomas, Morristown, NJ), derived from cantaloupe (*Cucumis melo*) and bound to a wheat protein, is said to "promote...the body's production of...antioxidants, including SOD, catalase, and glutathione peroxidase, in virtually every cell" creating "a state of alertness against...oxidative stress." Pomegranates (*Punica granatum*) contain important antioxidants, ellagic acid in the fruit's seeds and punicaligans in their juice.

Age-related degenerative conditions known to benefit from antioxidant supplementation include osteoarthritis (OA), OP, and age-related macular disorder (AMD). OA, characterized by painful, stiff, swollen joint tissues, may be relieved and even slowed by essential fatty acids, including omega-3s from fish oil; chondroitin sulfate; glucosamine sulfate; and methylsulfonylmethane (MSM). ImmuCell® (NeoCell) contains chondroitin, glucosamine, and hyaluronic acid, found in chicken collagen. For OP, Hunt mentions only calcium and vitamin D; however, many minerals and nutrients are essential for bone health, and several therapies may improve it. AMD, the leading cause of blindness in elderly Americans, is attributed largely to oxidation. Antioxidant carotenoids such as lutein and zeaxanthin may delay AMD. Lutein has recently been added to the list of generally recognized as safe (GRAS) ingredients for foods and beverages, and industry researchers expect this development to provide "an interesting indicator of how a market can progress, particularly when backed up by increasingly strong evidence of [lutein's] efficacy" in delaying onset of AMD. New lutein-containing products are anticipated in the fight against age-related disorders.

— Mariann Garner-Wizard

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