



Antioxidants and Antiaging

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Free Radical Theory of Aging

The Free Radical Theory of Aging, first proposed in 1956 by Dr. Denham Harman, postulated that free radical damage to various cell components underlies the aging process and causes degenerative diseases associated with aging. Research conducted during the nearly fifty years since Dr. Harman proposed his theory has helped scientists understand how free radicals damage cells and how the aging process we see can be attributed to cell damage. Today this theory is widely accepted, and it is thought that free radical damage is a causal factor in cancer, heart disease, Parkinson's disease, Alzheimer's disease, and skin aging.

Free Radicals and Antioxidants

Free radicals are highly reactive molecules that can damage cell structures and DNA. Both endogenous free radicals (those generated by the body) and exogenous free radicals (those generated by pollution, smoking, a poor diet, or UV exposure) constantly bombard the body, especially the skin. These free radicals must be neutralized immediately to defend cells.

Antioxidants react with free radicals, regulating them and rendering them less destructive. Each antioxidant has its own characteristics, and each functions slightly differently. Hydrophilic (water soluble) antioxidants work better in the watery parts of the cell whereas lipophilic (fat soluble) antioxidants protect the cell membrane, which is composed primarily of lipids (fats). Although each type of antioxidant has its own niche in the cell, they also work together, recycling each other, and providing an even stronger defense system. If not enough antioxidants are available, the body cannot effectively protect itself from the free radicals, and they then damage cell structures.

Specific Antioxidants

Vitamin E

- The original antioxidant – an extremely important lipid-soluble antioxidant known to protect cell membranes
- Provides numerous health benefits for the body and skin, including protection against heart attack and stroke
- Known for its ability to moisturize and nourish the skin
- Choose Vitamin E supplements and topical products that contain both tocopherols and tocotrienols

Vitamin C

- A water-soluble antioxidant known for its ability to strengthen immune function
- Protects skin from UV damage and may afford some protection against cancer
- Helps optimize skin health and repair skin damage by stimulating collagen growth (collagen is an important structural component of the skin)
- Ascorbic Acid (vitamin C) is unstable in skin care formulations; topical products often contain ascorbyl palmitate or Ester-C®, a proprietary, stable form of Vitamin C

Astaxanthin

- A powerful antioxidant shown in some studies to be 500 times more powerful than Vitamin E
- A deep red carotenoid naturally produced by microalgae that gives salmon, lobsters, and flamingos their color
- A powerful anti-inflammatory agent being studied for its ability to treat chronic inflammatory conditions
- Shown to provide strong protection for the skin from UV radiation

Pycnogenol®

- A rust-colored extract from the French Maritime Pine
- A patented, unique blend of antioxidants shown to protect skin from UV radiation
- An anti-inflammatory agent that also helps strengthen the capillary system and improve circulation
- Excellent for sensitive skin

Green Tea Extract

- A botanical extract produced from the leaf and bud of *Camellia sinensis* (oolong and black teas are also produced from this plant but they are more highly processed)
- Extensive research shows that the polyphenols in green tea are anticarcinogenic agents
- Both topical application and oral supplementation have been shown to provide protection against inflammation, chemical carcinogenesis, and photocarcinogenesis

Alpha Lipoic Acid

- The “universal” antioxidant – it functions in all areas of the cell and can recycle both water and fat-soluble antioxidants
- A compound found naturally in the body in very small concentrations
- Approved in Germany to prevent and treat the complications of diabetes
- Easily absorbed by the skin and capable of improving the function of other important skin antioxidants

Choosing Topical Antioxidants

- **Educate Yourself!**
- **Ask Questions – If in doubt, call the company and ask questions.**
- **Look for products with therapeutic concentrations.**

For More Information

Check out the **Natural Skin Care Guide** and **Information Center** at www.dermae.net for more information on antioxidants and skin care.

