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## PLANET HEALTH NEWSLETTER

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# SUPPLEMENTING WITH COLLAGEN

A tough, insoluble, fibrous protein, collagen is the most abundant protein in the body. According to the Cleveland Clinic, collagen accounts for approximately 30 percent of the body's protein, and it provides structure, support and strength to the skin, muscles, tendons, cartilage, bones and connective tissues. Healthy collagen levels contribute to joint health, protection of the kidneys and other organs, skin elasticity, as well as a healthy cardiovascular system.

The Harvard T.H. Chan School of Public Health reports that collagen can only be found in food sources that contain connective tissue, such as meat and fish. However, a number of animal and plant-based foods contain materials that encourage collagen production in the body.

Twenty eight types of collagen have been identified and each type differs by how the molecules are assembled, how the cell components that are added to where the collagen is used in the body. According to the Cleveland clinic, the five main types of collagen are:

- Type I: Makes up 90 percent of your body's collagen. Type I is densely packed and used to provide structure to the skin, bones, tendons and ligaments.
- **Type II:** Found in elastic cartilage, which provides joint support.
- **Type III:** Found in muscles, arteries and organs.
- Type IV: Found in the layers of your skin.
- Type V: Found in the cornea of the eyes, some layers of skin, hair and tissue of the placenta.

After the age of 20, the body begins to produce approximately 1 percent less collagen in the skin each year. As the body ages, the existing collagen in the body breaks down at a faster rate. In addition, the new collagen produced is lower in quality. The result is that the skin starts to become thinner and more fragile. And while the body naturally produces less collagen as it ages, a number of lifestyle factors such as smoking, exposure to ultraviolet light, and eating excessive amounts of sugar and refined carbohydrates can also decrease collagen levels in the body.

Research shows that collagen supplementation can be beneficial to a number of the body's systems. In one study that was published in the Eurasian Journal of Medicine, study participants with knee osteoarthritis were placed either in a group receiving only acetaminophen, or in a group receiving acetaminophen and 10 milligrams of type 2 collagen each day. After three months, the group receiving both acetaminophen and type 2 collagen had significant improvements in joint pain, function and quality of life.

Collagen may help protect the brain against Alzheimer's disease (AD), according to scientists from the Gladstone Institute of Neurological Disease (GIND), University of California, San Francisco (UCSF) and Stanford. In the study, which was published in the journal Nature Neuroscience, the researchers discovered that collagen VI protects brain cells against amyloid-beta (AB) proteins, which are widely thought to cause AD.

The researchers looked at the dentate gyrus, a specific area of the brain that is critical to memory and particularly vulnerable to AD, and compared the genes that were turned on and off in normal mice and a mouse model of AD. This analysis revealed the striking increase in collagen VI in the brains of mice that model AD.

Building on this initial finding, the team examined brain tissue from AD patients and normal non-demented humans and found that collagen VI expression was also higher in the AD patients. In addition, they discovered that the cellular source of the collagen VI in the brain was neurons, the very cells that the disease attacks and that we all need to thing and remember.

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