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Collagen Supplements: Benefits, Uses and Side Effects

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Collagen is a major component of connective tissue making up the structure of tendons, ligaments, skin, and muscles [1]. It is the most abundant protein in the extracellular matrix and has a characteristic triple helix of three polypeptide chains [2].

There have been 28 genetically distinct collagen types described. The following types of collagen are associated with bones (I, V), cartilage (II, XI, VI, X, IX, and XX) and dermis/skin (I, III, VI, VII, XIV, XVII, XX, and XIII) and represent the types that are most targeted for supplementation. In a research study by Asopa V, et al. [3] they found that adult cartilage synthesis occurred infrequently with type II collagen in comparison to young cartilage. In fact, pre-collagen levels were 10-fold less in adults. There is a growing body of evidence to suggest that collagen supplementation can improve skin, lessen arthritis symptoms and promote wound healing. This article will briefly explore some of those studies.

Skin and Wound Healing

Due to the synergistic effects of chronological and photoaging, hormonal, and environmental factors the appearance of the skin and integrity gets worse with age. The loss of connective tissue in the skin results in decreased elasticity, loss of skin tone, and progressive deepening of facial creases and wrinkles. The healthy appearance of the skin depends upon a sufficient supply of essential nutrients. Collagen supplementation has been found in numerous research studies to be effective in reducing wrinkles and promoting wound healing [4-9].

Arthritis

Osteoarthritis affects millions of people worldwide. The protective cartilage near the ends of the bones wear down over

time causing pain, stiffness, tenderness, loss of flexibility, grating sensations, and swelling. It mainly affects the hands, knees, hips, and spine [10].

A multitude of research studies [11-18] have shown Collagen to be instrumental in reducing pain, diminishing synovial inflammation and fibrotic response, re-modelling synovial membrane and improving quality of life. Collagen hydrolysate is absorbed intestinally and accumulates in the cartilage. There is causes a significant increase in the synthesis of extracellular matrix macromolecules by chondrocytes which produces a positive outcome.

Side Effects

Generally considered safe, the side effects of collagen supplements are generally mild and include diarrhea, heaviness in the stomach, and rashes [19]. While all collagen products for sale have been found to contain collagen there have been reported high levels of cadmium, a toxic heavy metal [20]. Fortunately, in 2016 the Food and Drug Administration prohibited the use of cows in dietary supplements to avoid bovine spongiform encephalopathy or mad cow's disease. Gelatin was exempted [20].

Recommendations

When purchasing collagen supplements buy those that contain all five types of collagen (I, II, III, V and X), those that are nonGMO (grass fed, hormone free and cruelty free sources) and hydrolyzed for absorption capsules. [19]. Finally ensure that there is a certificate of analysis with a label like NSF or USP [20,21].

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Conflict of Interest

Author declare no conflict of interest.

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