



Feed Your Skin & Joints®

NOT ALL COLLAGENS ARE ALIKE!

BEAUTIFUL SKIN



Clinically Proven Ingredient for
Joint, Skin and Connective Tissue Health

BIOCELL COLLAGEN SCIENCE REVIEW

HEALTHY JOINTS



BIOCELL COLLAGEN SCIENCE REVIEW

Intrinsic aging produces many physiological changes that affect how the body looks and feels, which depends, at least in part, upon the structural integrity of the connective tissue in joints, skin, tendons, ligaments, bones, and blood vessels. Connective tissue, as the name implies, bind organs together, hold organs in place, cushion them, and fill space. Connective tissue is primarily composed of an extracellular matrix (ECM) of collagen fibers, glycosaminoglycans (GAGs), and proteoglycans. Aging gradually weakens the connective tissue by the degeneration of the collagen and GAG network, and by UV initiated photo-damage and other lifestyle risk factors such as smoking or chronic exposure to environmental pollutants. Food supplements have been used for several decades to ameliorate the physiological degradation of connective tissue, associated with a decline in skin firmness and elasticity, and joint comfort and mobility due to aging.*

Dietary supplement manufacturers and formulators are seeking clinically substantiated ingredients to include in their products that enable them to make reliable and more specific and targeted marketing claims. The BioCell Collagen ingredient is clinically proven to significantly reduce facial lines, wrinkles, crow's feet, and skin dryness while improving skin elasticity and boosting skin collagen and hyaluronic acid. BioCell Collagen is also clinically proven to promote joint comfort and mobility.*

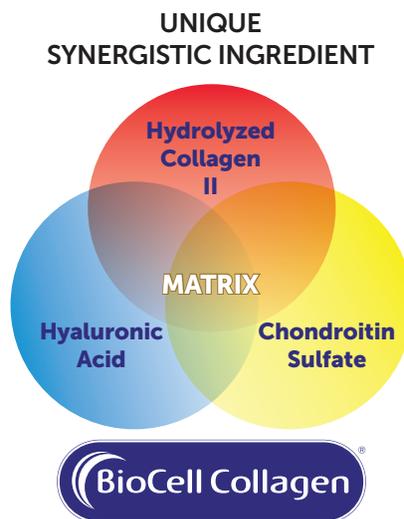
A COMPREHENSIVE APPROACH TO HEALTHY AGING

Many internal and external factors influence the pace and effects of aging. The progression of aging is linked to the steady deterioration of the extracellular matrix (ECM) in connective tissue, resulting in decreased synthesis and increased degradation of molecules essential for connective tissue integrity. Since collagen and GAGs such as chondroitin sulfate (CS) and hyaluronic acid (HA) are major molecular constituents of the ECM, their replenishment may help counteract various undesirable effects of aging. These effects manifest in the physical signs of aging, including overall bodily weakness, vulnerability to injury, and visible skin changes such as wrinkles. BioCell Collagen comprehensively addresses the degradation of these molecules by providing

bioactive building blocks of collagen and GAGs.* BioCell Collagen® provides superior nutritional support with clinically substantiated structure-function claims that other ingredients cannot match.*

THE UNIQUE MOLECULAR NATURE OF BIOCELL COLLAGEN®

The majority of collagen ingredients in the market come from the entire carcasses of animals (e.g., cow, pig, and marine). These materials are usually more than 90% protein and labeled as collagen peptides, hydrolyzed collagen, collagen hydrolysate, collagen type I & III, multi-collagen peptides types I, II, III, V & X or gelatin (also a form of hydrolyzed collagen).



BioCell Collagen® is not just an ordinary collagen ingredient. BioCell Collagen® is a clinically studied dietary ingredient composed of naturally-occurring hydrolyzed collagen type II peptides, chondroitin sulfate, hyaluronic acid. The synergy of biomolecules found in BioCell's unique matrix plays a significant role in its efficacy and is not identical to any other collagen ingredients or blends. Various studies, including seven human clinical trials, prove the safety, efficacy, bioavailability of BioCell Collagen®.*

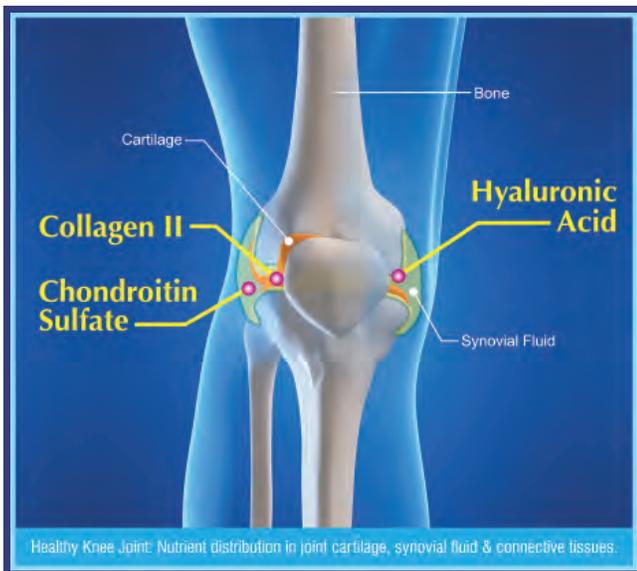
BioCell Collagen is made from pure dietary chicken sternal cartilage that is free from hormones and antibiotics. Chicken sternal cartilage closely mirrors the composition of human

cartilage rich in type II collagen, chondroitin sulfate, and hyaluronic acid. Cartilage is a clean and desirable source since it is free from blood vessels, lymphatics, and nerves that are known to carry diseases and impurities. Therefore extracting exclusively from cartilage eliminates the risk of potential contamination. BioCell uses a patented manufacturing procedure that subjects the chicken sternal cartilage through various processes, including filtration, purification, concentration, hydrolysis, and sterilization, to ensure consistent quality and safety. BioCell Collagen is self-affirmed GRAS (Generally Recognized As Safe), is non-GMO and free of gluten, soy, shellfish, fish, egg, milk, peanuts, and sugar. BioCell Technology manufactures BioCell Collagen in the USA and Germany.

BIOCELL COLLAGEN® JOINT HEALTH & MOBILITY STUDIES

BioCell Collagen® has a comprehensive approach to joint health, one that not only targets cartilage, but the related tendons, ligaments, and synovial fluid. Glucosamine and chondroitin formulations were the standard of care in joint health for more than two decades with limited success. BioCell Collagen® offers significant advantages with its advanced, unique composition, which mirrors human articular cartilage for the comprehensive maintenance of healthy joint function. BioCell Collagen®'s uniquely differentiated properties provide broader, more complete, and superior nutritional support.*

BioCell Collagen® provides the building blocks of macromolecular collagen, HA, and chondroitin sulfate essential for the health of cartilage, synovial fluid, and tendon and ligament connective tissue.*

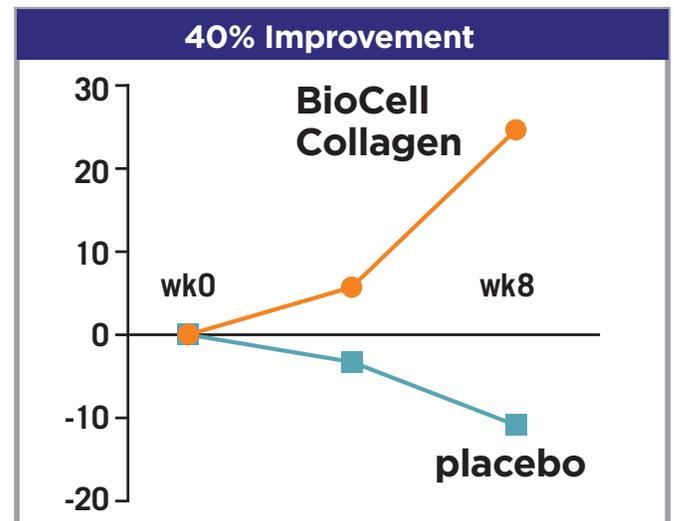


Clinically Proven in Double-Blind Placebo-Controlled Human Clinical Trials

An 89 subject, prospective, crossover double-blind clinical study (1999) compared 2 g daily supplementation of the BioCell ingredient versus placebo over three months. Out of the 89 participants who complained of subjective discomfort of various types, 80 of them (89%) reported some level of improvement within 45 days of taking the BioCell supplement. In contrast, only one subject on placebo had improved—no adverse events with the BioCell supplement.*

In an 80 subject, randomized, double-blind, placebo-controlled trial for joint health, investigators tested the tolerability and efficacy of BioCell Collagen® supplementation. The participants were divided into two groups and administered either 2 g of BioCell Collagen or placebo for 70 days. Compared to placebo, the BioCell group had a significant reduction of joint discomfort on days 35 ($p = 0.017$) and 70 ($p < 0.001$). Furthermore,

the BioCell group experienced a significant improvement in physical activities compared to the placebo group on days 35 ($p = 0.007$) and 70 ($p < 0.001$). BioCell Collagen was well tolerated and found to be effective, thereby improving mobility and quality of life.* The peer-reviewed study was published in the Journal of Agriculture and Food Chemistry (Schauss et al., 2012). These results were similar to the results of another earlier double-blind placebo-controlled trial tested on sixteen people (Kalman et al., 2004).*



BIOCELL COLLAGEN® SPORTS NUTRITION STUDY

In a pilot randomized, double-blind placebo-controlled study of recreationally active people, participants took 3 grams of BioCell Collagen® over six weeks before an upper-body bench press challenge. Participants experienced favorable improvements in stress resilience and recovery after bouts of intense resistance exercise without any reported side effects (Lopez et al., 2014)*.

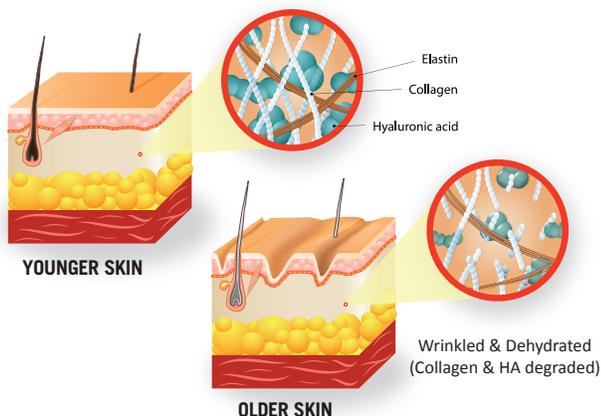


BEAUTY-FROM-WITHIN STUDIES

In a 12-week study, women who took 1000 mg (1 g) of BioCell Collagen daily had 76% less dryness/scaling, and their fine lines and wrinkles had reduced by 13.2% when compared to baseline levels. Additionally, both collagen levels and microcirculation were significantly improved.* The outcome of this study was published in the Clinical Interventions in Aging journal (Schwartz and Park et al., 2012).



In one of the most substantial studies of a skin health supplement, 1000 mg of BioCell Collagen® was found to visibly reduce common signs of skin aging, including lines and wrinkles, within 12 weeks of daily use. The findings reported in this randomized, double-blind, placebo-controlled clinical trial included a measurable improvement in signs of aging in women, represented by increased skin elasticity, reduction of crow's feet, and improvement in depth and number of fine lines and wrinkles.* The full findings of the peer-reviewed study are published in the journal of Alternative Therapies in Health and Medicine (Schwartz et al., 2019).



UVB-Induced Photoaging Lab Study

40 hairless mice were equally divided into four groups, a group receiving no UVB exposure and no supplement, a group receiving UVB exposure with no supplement, and two active groups receiving UVB exposure and different dosages of the supplement (human equivalent to 1 g – 3 g daily).

The study found that oral supplementation with BioCell Collagen, with controlled UVB exposure, resulted in reduced signs of photoaging, including significant decreases in wrinkles and transepidermal water loss, and significant increases in skin elasticity and hyaluronic acid (HA) content.* The study findings are published in the Journal of Functional Foods (Phipps et al., 2020).

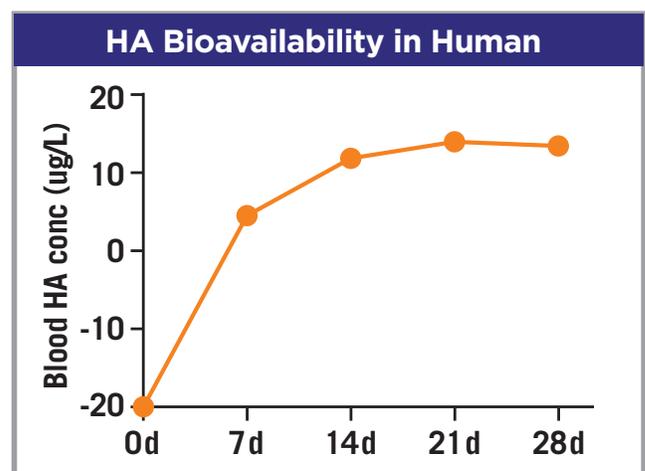
ABSORPTION AND BIOACTIVITY STUDIES

BioCell Collagen® is Uniquely Bioavailable and Bioactive

Research suggests that the ingestion of BioCell Collagen® stimulates chondrocytes (cartilage producing cells) and fibroblasts (skin producing cells) in the renewal of cartilage and skin. Moreover, BioCell Collagen® was shown to have a concentration-dependent inhibition of hyaluronidase. This enzyme degrades hyaluronic acid, which can contribute to signs of aging on the skin and loss of viscoelasticity of joint synovial fluid. BioCell Collagen® also attenuates deleterious changes in biomarkers including creatine kinase, lactate dehydrogenase, and C-reactive protein adding further clues into its mechanism of action.*

BioCell Collagen® Hyaluronic Acid Absorption Study

Hyaluronic Acid (HA) is in virtually all tissues of the body. In the joint, HA plays two essential roles. First, it acts as a key structural molecule to form healthy, functional cartilage. Second, HA is a major component of synovial fluid, the lubricant found in our joints that allows smooth and easy movement. In a 28-day bioavailability study in humans showed that ingestion of BioCell Collagen® (1500 mg/day) led to a 60 times increase in HA levels at steady state.*



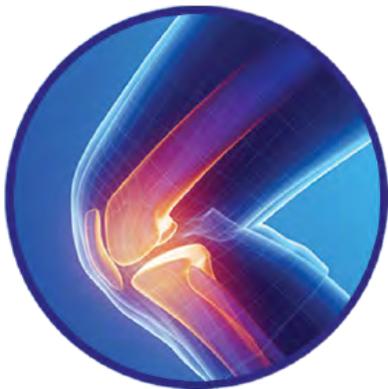
* These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.



SKIN HEALTH

BioCell Collagen® Clinical Dosage: 1 g daily

- Reduces facial lines and wrinkles*
- Reduces crow's feet*
- Improves skin elasticity*
- Reduces skin dryness*
- Boosts skin collagen & hyaluronic acid*



JOINT HEALTH

BioCell Collagen® Clinical Dosage: 2 g daily

- Promotes joint comfort and mobility*
- Promotes cartilage health and stimulation*
- Promotes synovial fluid health*
- Boosts hyaluronic acid*
- Promotes post-workout recovery* (3 g)

* These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

DISCLAIMER: BioCell Technology, LLC ("BioCell") makes no representations or warranties, express or implied, of the accuracy, reliability, or completeness of the information concerning this product or brochure, or its use or fitness for any purpose. BioCell does not assume liability, whether direct or indirect, for any use of the information presented in this brochure for any reason by any person or entity. Use of this information shall be at your discretion and risk. Nothing herein relieves you from consulting with an attorney or regulatory consultant or carrying out suitability determinations and tests and from your obligation to comply with all applicable laws and regulations and to observe all third party rights. Nothing in this brochure constitutes a license (explicit or implicit) of any of BioCell's intellectual property rights. The statements about this product have not been evaluated by the United States Food and Drug Administration (FDA). This product is not intended to diagnose, treat, cure, or prevent any disease. The uses and claims for BioCell's products recommended in the brochure should be adapted to the current local regulatory environment.



BioCell Technology, LLC
 20 Truman St., Suite 105
 Irvine, CA 92620 • USA
 Ph: 714-632-1231
 Fax: 714-632-5866

BioCell Technology International GmbH
 Schulstrasse 6
 DE-25371 Seestermühe / Germany
 Tel: +49(0)4125 - 95 79 993



BioCell Collagen® and Feed Your Skin & Joints™, variously in name and/or design, are trademarks of BioCell Technology, LLC, and are registered in the United States and other jurisdictions. (Pat.: <https://www.biocellcollagen.com/patents>)

©2020 BioCell Technology, LLC All rights reserved.