



Foodmate Collagen Peptides

Collagen in Our Body



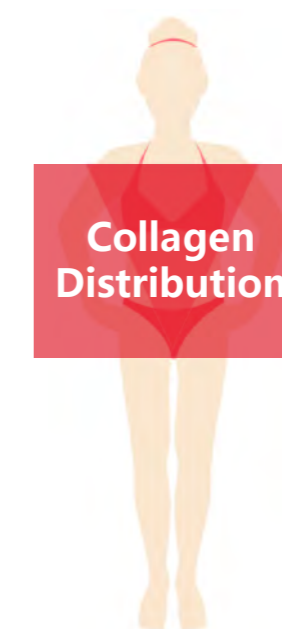
30%
of the total protein in human body is Collagen

3 KG
is how much collagen in an adults' body weighs.

All major organs
contain collagen

A main component
of extracellular matrix

Body Parts	Containment (%)
Bone (minerals exclude)	88.0
Tendons	86.0
Skin	71.9
Cornea	68.1
Cartilages	46~63
Ligaments	17.0
Aortas	12 ~ 24
Liver	3.9

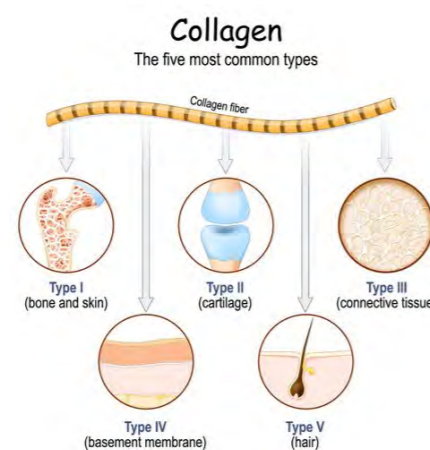


What Is Collagen?

Collagen is the most abundant protein in the human body. It is found throughout connective tissue and plays many important roles in the body. Collagen is essential for skin structure and blood clotting, as well as acting as a building block for bones, skin, ligaments, tendons, and muscles. Collagen functions as the “glue” that holds everything together. [1]

Among all 28 types of collagen, 5 types are most important[2]

Type	Distribution	Function
Type I	Bone & Skin	Major composition
Type II	Cartilage	Elasticity maintaining
Type III	Connective tissue	Structural support
Type IV	Basement membrane	Giving stability
Type V	Hair	Stimulate growth



[1] Ricard-Blum S. (2011). The collagen family. Cold Spring Harbor perspectives in biology, 3(1), a004978. <https://doi.org/10.1101/cshperspect.a004978>
 [2] Preparation and characterization of the different types of collagen. [https://doi.org/10.1016/0076-6879\(82\)82059-4](https://doi.org/10.1016/0076-6879(82)82059-4)

How Do We Produce Collagen Peptides?

Generally, collagen molecules are denatured and partially hydrolysed to form gelatin (100kDa).

Gelatin can then be decomposed into small peptides using specific enzymes with cleavage activity (proteinase).

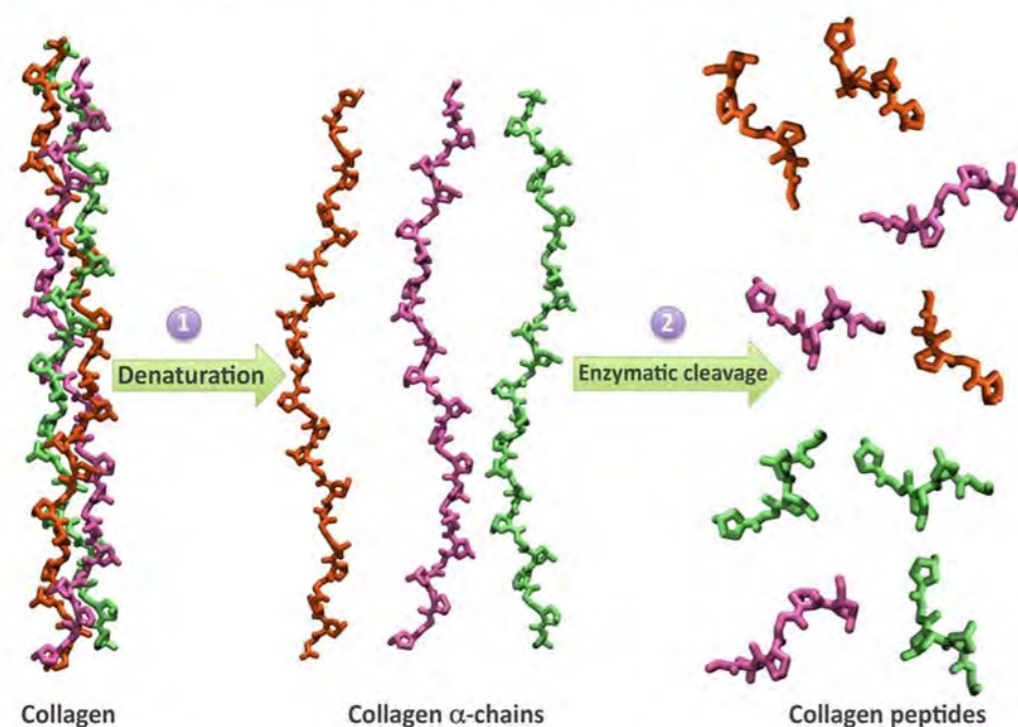
The molecular weight distribution of collagen peptides usually span in the range 0.3 - 8 kDa.

Due to the low molecular weight, there are several advantages of using collagen peptides with respect to native collagen:

- collagen peptides is highly digestible;
- collagen peptides is easily absorbed and distributed in the human body[3]

CONTENS

INDUSTRIAL PRODUCTION OF HYDROLYSED COLLAGEN



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[3] An Overview of the Beneficial Effects of Hydrolysed Collagen as a Nutraceutical on Skin Properties: Scientific Background and Clinical Studies[J]. Open Nutraceuticals Journal, 2015, 8(1):29-42.DOI: 10.2174/1876396001508010029

BeutiPep™ for Skincare

BeautyPep™ Benefits for Skin

There are 28 different types of collagen but 80-90% of collagen in the human body are types I, II and III. The skin is made up primarily of type I collagen, but type III is needed to support type I. Foodmate BeutiPep™ contains both type I and type III collagen.

Foodmate BeutiPep™ is a pure, low-molecular-weight fish collagen peptide extracted from fish scales and fish skin, and processed into a form that is easily absorbed by the human body. This is this pure white powder. It has been shown that fish-derived collagen is absorbed about 1.5 times better than pig skin-derived collagen. Easily absorbed by the body thanks to its low molecular weight.[7]

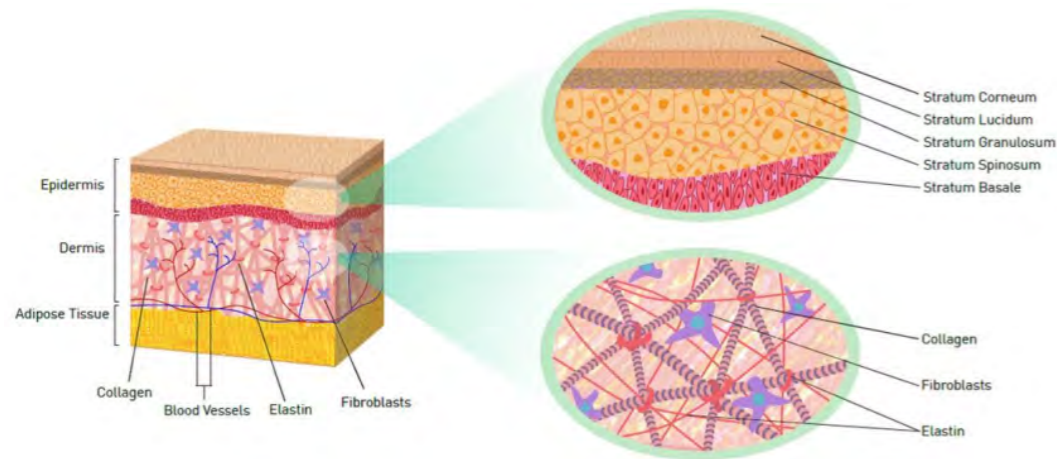
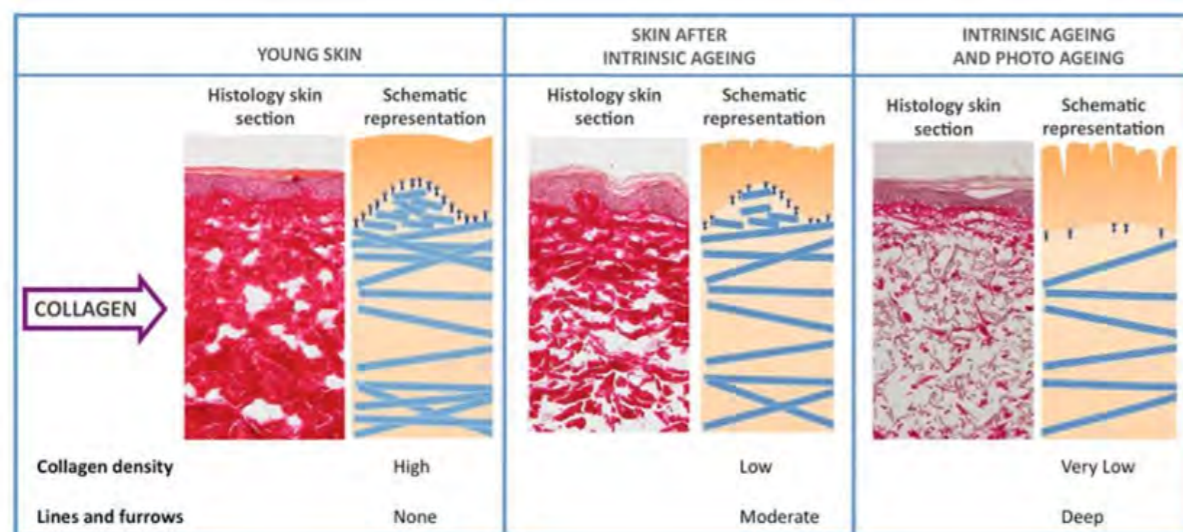
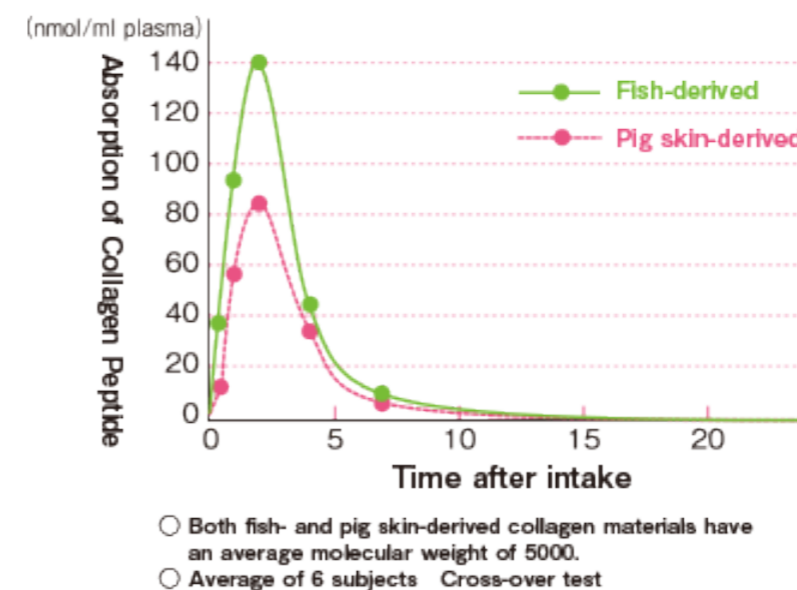


Diagram showing the structure of healthy skin, in which the different layers are visible: epidermis, dermis and adipose tissue. Collagen fibres, elastin and fibroblasts are also represented in the diagram.

Collagen decreases after intrinsic and extrinsic ageing[4][5]



Comparison of collagen peptide intake into the blood by different ingredients with the same molecular weight



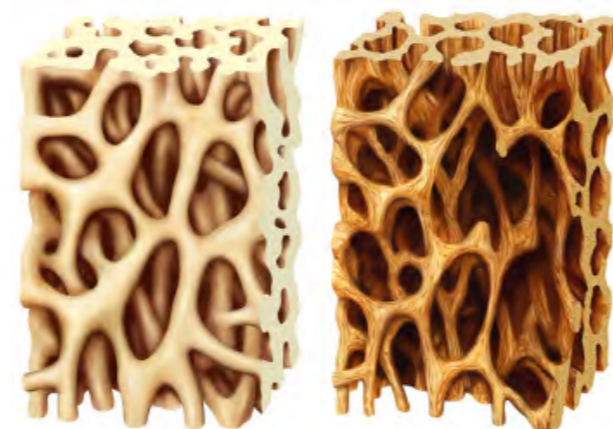
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[7]Ohara, Hiroki; Matsumoto, Hitoshi; Ito, Kyoko; Iwai, Koji; Sato, Kenji(2007). Journal of Agricultural and Food Chemistry 55(4),1532-1535.doi:10.1021/jf062834s

PrimePep™ for Bone Health

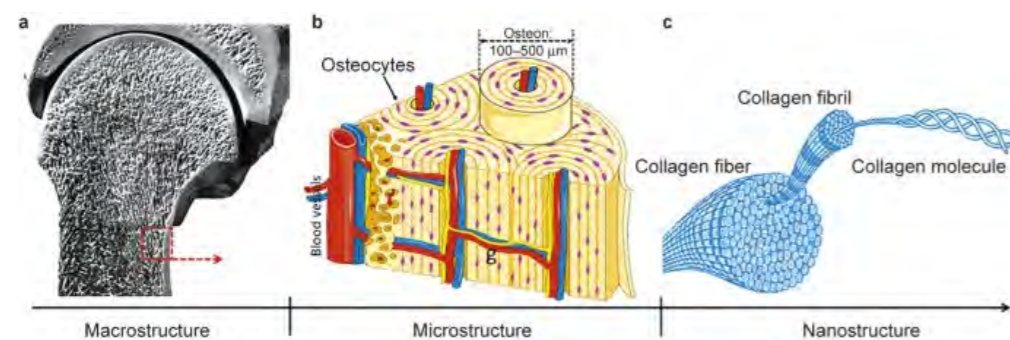
Root Cause for Osteoporosis

Bioactive peptides, derivatives of proteins, show versatile biological effects and represent potential health-promoting agents as functional food ingredients and/or nutraceuticals. Bone health depends on the balance between bone formation and resorption. When the balance is disrupted, bone diseases such as osteoporosis and fragility fractures may result. Accumulating evidence suggests that peptides derived from endogenous proteins and food proteins enhance bone health.[8]



Source of figure: Frank Geisler (MediDesign)

(a) At the macroscopic level, bone consists of a dense shell of cortical bone with porous cancellous bone at both ends. (b) Repeating osteon units within cortical bone. In the osteons, 20–30 concentric layers of collagen fibers, called lamellae, are arranged at 90° surrounding the central canal, which contain blood vessels and nerves. (c) Collagen fibers (100–2000 nm) are composed of collagen fibrils. The tertiary structure of collagen fibrils includes a 67 nm periodicity and 40 nm gaps between collagen molecules. The hydroxyapatite (HA) crystals are embedded in these gaps between collagen molecules and increase the rigidity of the bone.[9]



18% Collagen

95% inorganic matters of our bone is solid calcium which gives our bone the strength it needs; Collagen, on the other hand, accounts for more than 88% of the organic matters in our bone. It plays an irreplaceable role in providing tenacity to our bone. Bone calcium is regularly deposited in the mesh structure formed by collagen.

80% Calcium phosphate

PrimePep™ Benefits for Bone

The organic mass of the bone matrix comprises about 90% of type I and 5% of type V collagen the remainder being bone-specific phospho- and glycoproteins such as osteopontin, bone sialoprotein, osteocalcin, osteonectin, and others.[10]



Replenishing calcium without replenishing **COLLAGEN** is equivalent to using cement without steel

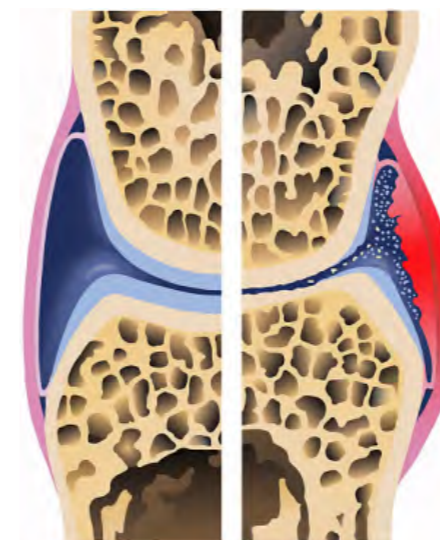
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 [9] Discher DE, Mooney DJ, Zandstra PW . Growth factors, matrices, and forces combine and control stem cells. Science 2009; 324: 1673 - 1677.
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[10] Niyibizi, C., and Eyre, D.R. (1989). Bone type V collagen: chain composition and location of a trypsin cleavage site. Connect. Tissue Res. 20, 247-250.

ArthrPep™ for Joints Healthy

Articular cartilage is particularly important for joint mobility and health. Damage of cartilage and tendons by overload, injury, or aging leads to inflammation and faulty loading, which finally results in the degeneration of joint tissue. The underlying disease is referred to as osteoarthritis and affects both the cartilage and the bone.

In healthy individuals, a dynamic balance is maintained between formation and degradation of extracellular matrix components such as collagen type II and aggrecan by cartilage cells (chondrocytes).[11]



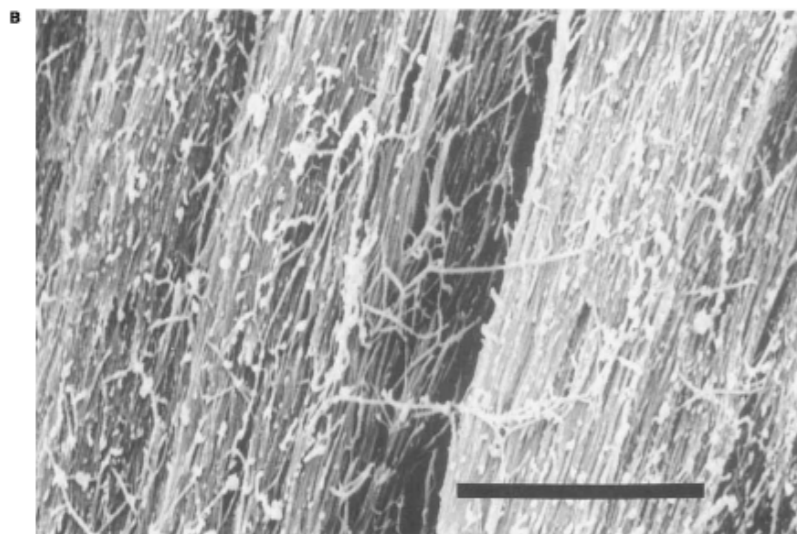
Source of figure: Frank Geisler (MediDesign)

Healthy and Arthrotic Joints (Osteoarthritis)

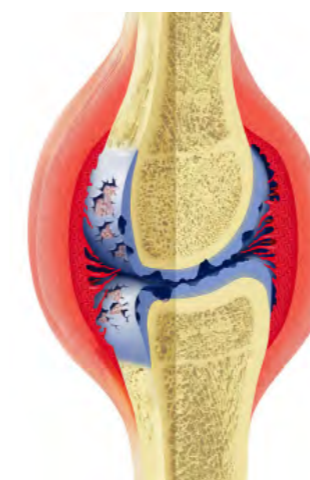
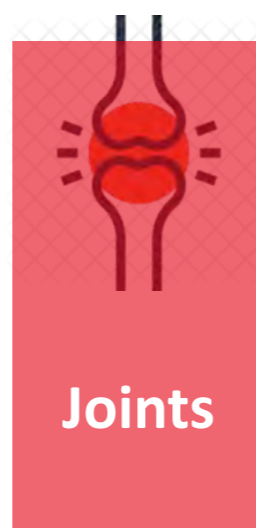
Schematic view of healthy joint (left) and arthrotic joint (right)

Osteoarthritis (degenerative joint disease) is the most common disease of a joint. Joint degeneration can result from joint wear and tear (arthrosis deformans). The cause of primary osteoarthritis is not yet clear, but a poor quality of cartilage tissue seems to be involved. Secondary osteoarthritis results from mechanical overuse of a joint (e.g., in hip dysplasia), inflammatory reactions (in osteoarthritis), or metabolic disorders (in chondrocalcinosis).

Cartilage abrasion can be gradual (latent osteoarthritis) or turn into a very painful disease (activated osteoarthritis). Although the degradation of cartilage tissue cannot be stopped by the work of physicians, the progression of the disease can at least be slowed down.



<https://bioactive-collagen-peptides.com/effects-joints/>



Source of figure: Frank Geisler (MediDesign)

Joints in Rheumatoid Arthritis (Chronic Polyarthritis)

Schematic view of a joint affected by active rheumatoid arthritis. Rheumatoid arthritis (chronic polyarthritis) refers to an autoimmune disease that results in tissue destruction induced by the body's own immune reactions.

Inflammatory defense reactions are characterized by classic features such as heat, redness, swelling with restricted movement (functio laesia), and pain. The invasion of misdirected (autoreactive) immune cells plays an important role in disease progression, resulting in inflammation of the joint (osteoarthritis), cartilage destruction, and over-activation of bone-degrading cells (osteoclasts).

Both sides of the joint are affected in most cases and there is a preference for small joints. Further characteristics are nocturnal pain, morning stiffness, and disease progression highly refractory to standard therapy.

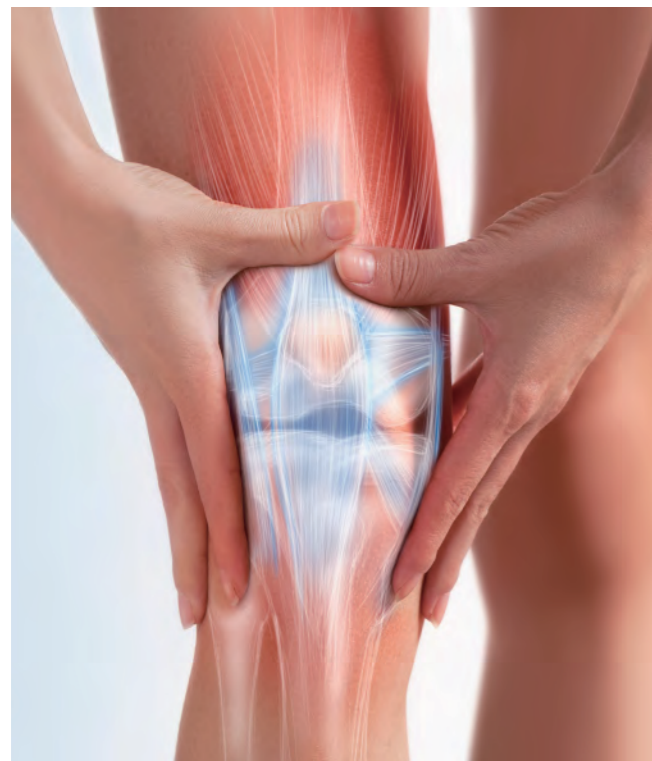
[11] Dr. John M. Clark (1991). Variation of collagen fiber alignment in a joint surface: A scanning electron microscope study of the tibial plateau in dog, rabbit, and man. , 9(2), 246 - 257. doi:10.1002/jor.1100090213

ArthrPep™ Benefits for Joints



Clinically proven Collagen peptides can be used to prevent the degradation of cartilage and thus to prevent discomfort and joint pain while maintaining collagen levels inside the cartilage. Collagen peptides used in Collagen ArthrPep™ restore Bone Mineral Density to a normal level and maintain lean muscle mass.

ArthrPep™ reduces fast inflammation that is causing pain in the joints and helps with the natural production of collagen. Latest research has shown that the MSM helps relieve pain, especially in cases of osteoarthritis, rheumatoid arthritis, muscular pain and tendinitis.



ArthrPep™ Benefits

- People who exercise often
- People with joint problems
- Athletes
- People recovering from injuries
- People who regularly strain joints
- Overweight people with sedentary
- People looking to maintain healthy joints and strong bones

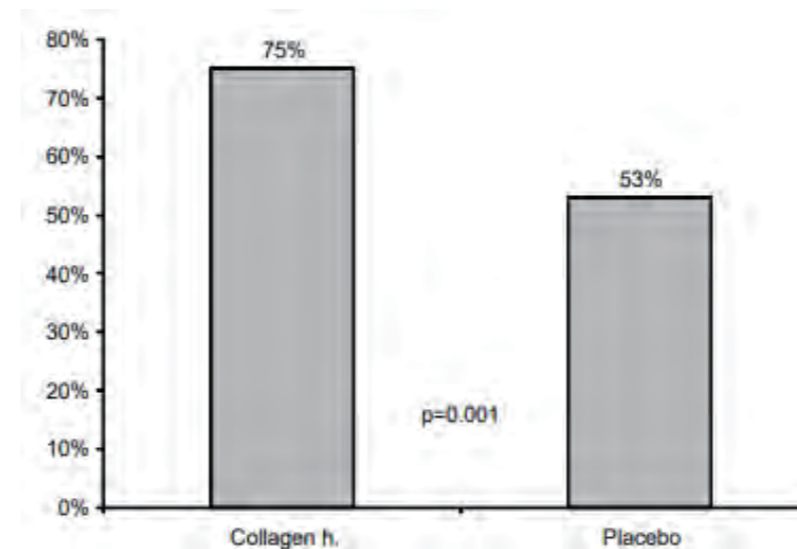
Supportive Researches

International Journal of Food Sciences and Nutrition,
August 2009; 60(S2): 99-113

informa
healthcare

A randomized controlled trial on the efficacy and safety of a food ingredient, collagen hydrolysate, for improving joint comfort

Current options to promote joint comfort are limited to medicines that can reduce pain but can also have adverse effects. Collagen, a major component of joint cartilage, is found in the diet, particularly in meat. Its hydrolysed form, collagen hydrolysate (CH), is well absorbed. CH may stimulate the joint matrix cells to synthesize collagen, so helping to maintain the structure of the joint and potentially to aid joint comfort. Methods In a randomized, double-blind, controlled multicentre trial, 250 subjects with primary osteoarthritis of the knee were given 10 g CH daily for 6 months. There was a significant improvement in knee joint comfort as assessed by visual analogue scales to assess pain and the WOMAC pain subscale. Subjects with the greatest joint deterioration, and with least intake of meat protein in their habitual diets, benefited most. Conclusion CH is safe and effective and warrants further consideration as a food ingredient. [12]

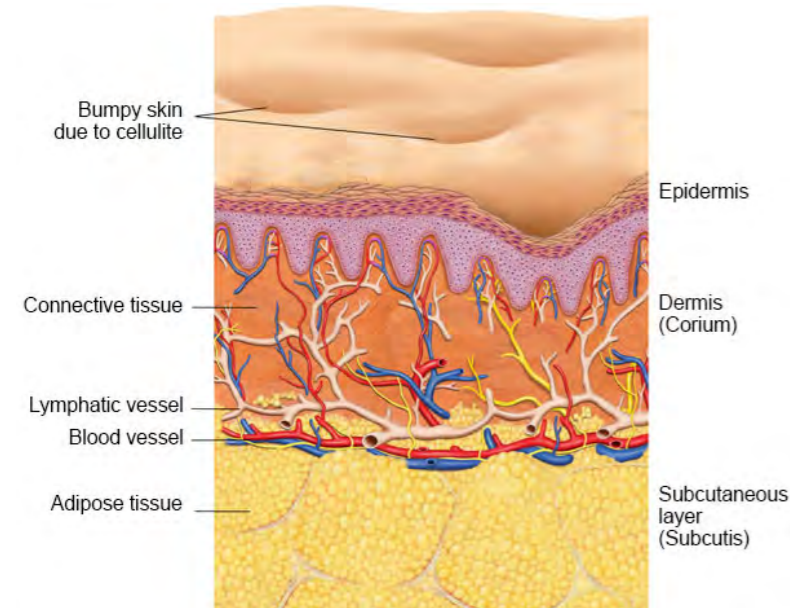


[12] Benito-Ruiz, P.; Camacho-Zambrano, M.M.; Carrillo-Arcenales, J.N.; Mestanza-Peralta, M.A.; Vallejo-Flores, C.A.; Vargas-Lopez, S.V.; Villacis-Tamayo, R.A.; Zurita-Gavilanes, L.A. (2009). A randomized controlled trial on the efficacy and safety of a food ingredient collagen hydrolysate, for improving joint comfort. *International Journal of Food Sciences and Nutrition*, 60(s2), 99-113. doi:10.1080/09637480802498820

ShapeFit™ for Body Shaping

Cellulite, also known as orange-peel skin, is primarily a cosmetic problem, that affects about 85% of all women over the age of 20. It occurs mainly on the thighs, buttocks, and abdomen and is characterized by its bumpy, dimpled appearance on the skin surface, at varying levels of severity.

Collagen peptide weight loss can usually play a role in assisting weight loss, but the specific weight loss effect should be determined in conjunction with your own condition. Collagen peptides can avoid the formation of a large amount of fat after ingestion, which can play the role of weight loss, and can also promote the burning of fat in the body, and also help shape the body. Individuals have different physiques, so there will be a certain deviation in the effect of weight loss, which cannot be generalized.



Source of figure: Frank Geisler (MediDesign)

ShapeFit™ Benefits for Body Shaping

The organic mass of the bone matrix comprises about 90% of type I and 5% of type V collagen the remainder being bone-specific phospho- and glycoproteins such as osteopontin, bone sialo-protein, osteocalcin, osteonectin, and others.[13]

Enhancing muscle-building and fat-reducing effects. Collagen peptides help muscle fibers increase and thicken, and can reduce the size of fat cells

Characteristic Amino Acid Chain

Hyp-Gly≥1.91%

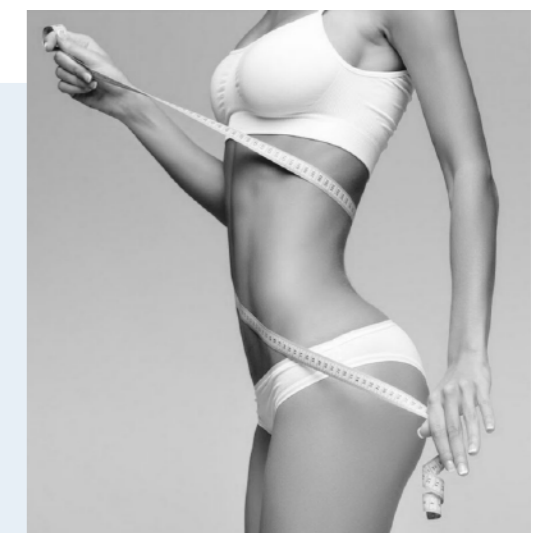
Molecular Weight

550-2000Da

Types

TYPE I COLLAGEN PEPTIDES

- Promotes weight management
- Increases satiety
- Helps to lose or maintain weight
- Easily digestible protein
- Excellent bioavailability
- Multiple nutritional benefits
- Muscle regeneration
- Connective tissue support (for joints, tendons, ligaments)
- Reduces joint pain



PepFit™ Benefits for Sports

From professional athletes to health-conscious consumers, today's active buyers are looking for more ways to up their game. With PepFit™ collagen solutions, you can give them a way to accelerate recovery, support connective tissue – and reach the next performance level.[14]



Collagen peptides for a healthy lifestyle
TYPE I COLLAGEN PEPTIDES



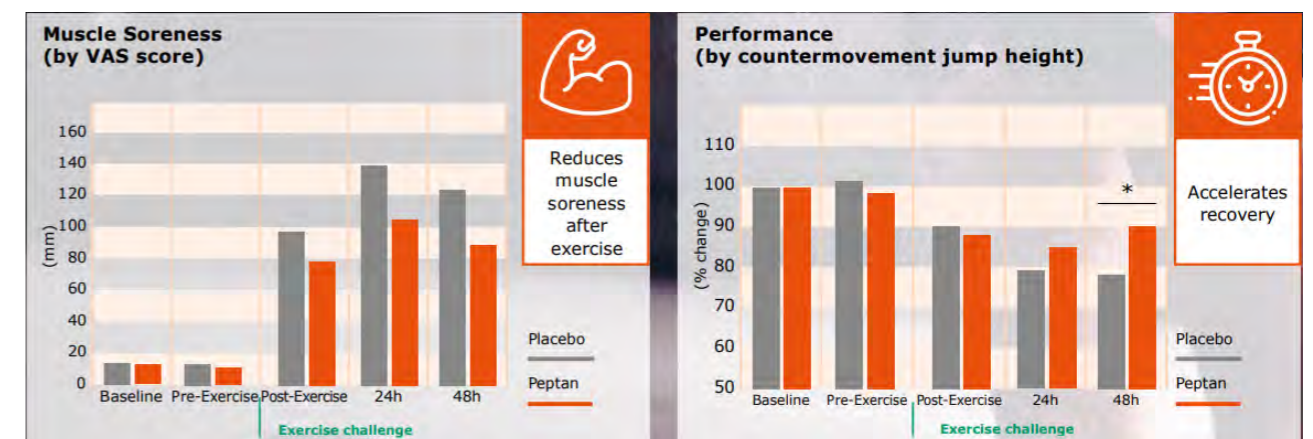
Bringing joint health a step closer
TYPE III COLLAGEN PEPTIDES



The perfect solution for protein enrichment and application versatility
2000Dal



The effects of collagen peptides on muscle damage, inflammation and bone turnover following exercise: a randomized, controlled trial



Muscle soreness was recorded on a VAS scale for pain after the performance of a squat (90° knee flexion) before and after a session of intense exercise by 24 participants supplemented with either Peptan or a placebo. [15]

Performance was measured by the height of a countermovement jump(knee flexion of 90° and jumping up as high as possible) before and after a session of intense exercise in 24 participants supplemented with either Peptan or a placebo. [15]

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YOUR LOYAL
MATE



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