SUMMARY

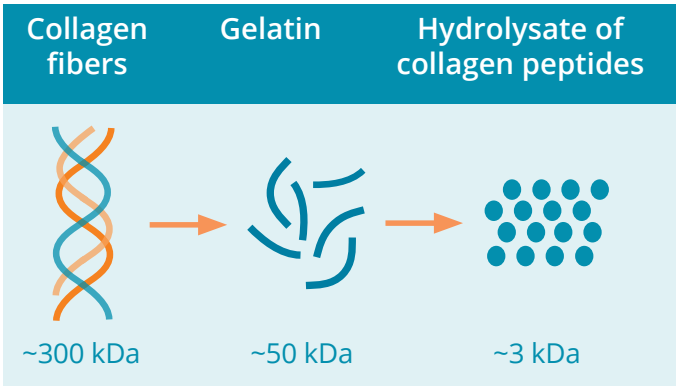
— Demand grows for evidence-based food ingredients that support joint, skin and bone health
— Collagen hydrolysate is a valuable source of amino acids that can stimulate collagen synthesis, thereby promoting the regeneration of connective tissues
— Final dosage, form and formulation influence digestibility and bioavailability

COLLAGEN HYDROLYSATE AS DIETARY SUPPLEMENT

Scientific and clinical observations support beneficial effects on skin, joint and bone health

Dietary supplements can be thought of as nutrition additives for essentially healthy people prioritizing health over age. During the past five years, physical activity, and mental/emotional well-being have become more prominent health and wellness goals as part of an active lifestyle worldwide.

Collagen hydrolysate has been discussed as food ingredient that helps consumers optimize their personal fitness, improve muscle performance and promote overall agility as well as healthy aging. Consisiting of small peptides with a molecular average molecular weight of 3 kDa, it is produced from gelatinization and subsequent enzymatic hydrolysis of native collagen, which is found in rich collagenic animal tissues.



Evidence-based, innovative collagen hydrolysate-based product developments that tap into key consumer trends will continue to gain success in the food ingredient market.

KEYWORDS

Collagen hydrolysate, collagen peptides, ageing, osteoarthritis, osteoporosis, joint pain, wrinkles, fitness, agility, well-being.

This short review is intended to provide a brief overview regarding several areas in which the intake of collagen hydrolysate as a nutritional supplement has been evaluated in studies and clinical trials.

FIELDS OF KNOWLEDGE

Bioavailability: In a digestibility study, collagen hydrolysate exhibited a bioavailability of 82% after 6 hrs and 96% after 12 hrs of intake[1]. Other *in vivo* studies in rodents that used radioactive marked Carbon (C14) as tracer showed that after intake the hydrolized collagen reaches muscles, joints, bones and cartilage, where it remains, while it disappears in plasma and organs[2,3].

CLINICAL TRIALS

Skin: An improvement in hydration and elasticity has been supported by various clinical studies[4, 5, 6, 7], including the reduction of wrinkles[8, 9], thus affirming that hydrolyzed collagen is capable of fighting dermal ageing.

Joints: Several clinical trials and studies support the ability of collagen hydrolysate to reduce joint pain and to improve mobility and functionality[10, 11, 12], concluding that a daily supplement of 10 g is able to reduce the risk of joint deterioration and to improve physical performance[13].

Bones: In a double-blind, randomized clinical study[14, 15], 94 women diagnosed with postmenopausal osteoporosis and treated with intramuscular calcitonin received a daily supplement of collagen hydrolysate or placebo for six months. The combined effect of collagen hydrolysate and calcitonin therapy was clearly more effective than calcitonin alone in patients with postmenopausal osteoporosis.

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Mechanism of action: Collagen hydrolysate has a dual-action mechanism: 1.- free amino acids provide building blocks for the formation of collagen and elastin fibers, 2.- collagen oligopeptides act as ligands, binding to receptors present on fibroblast membranes where they stimulate the production of new collagen[16].

Conclusion: The current body of literature supports that high quality collagen hydrolysate is a valuable source of amino acids. Already 10 g daily intake stimulates and facilitates natural collagen synthesis which promotes the regeneration of collagenous tissues. Degenerative diseases like osteoarthritis and osteoporosis can be prevented or treated and dermal deterioration can be slowed.

FINAL REMARKS

Demand continues to grow for evidence-based ingredients that support joint, skin and bone health. Consumers are seeking products and ingredients with proven benefits that are supported by published research. Most end users look for products with ingredients that they recognize and collagen has a long and established history as a beneficial functional food component.

Collagen hydrolysate in particular offers a wealth of possibilities regarding final dosage form, formulations, digestibility, safety, bioavailability and tolerance.

REFERENCES

1. Zeijdner EE. Digestibility of collagen hydrolysate during passage through a dynamic gastric and small intestinal model (TIM-1). TNO Nutrition and food Research Report 24 June 2002

2. Oesser S, Adam M, Babel W, Seifert J. Oral Administration of 14C Labelled Gelatin Hydrolysate Leads to an Accumulation of Radioactivity in Cartilage of Mice (C57/BL). American Society for Nutritional Sciences 1999:1891-1895

3. Watanabe-Kamiyama M, et al. Absorption and effectiveness of orally administered low molecular weight collagen hydrolysate in rats. J Agric Food Chem 2010; 58(2):835-841

4. Morganti P, Randazzo SD, Bruno C. Oral treatment of skin dryness. Cosmetics and Toiletries, 1988; 103:77-80

5. Sumida E, Hirota A, Kuwaba K, Kusubata M, Koyama Y, Araya T, Irie S, and Kasugai S. The effect of oral ingestion of collagen peptide on skin hydration and biochemical data of blood. Journal of nutritional food, 2004; 7(3):45-52

6. Matsumoto H, Ohara H, Ito K, Nakamura Y, and Takahashi S. Clinical effects of fish type I collagen hydrolysate on skin properties. ITE Letters on batteries, new Technologies and medicine, 2006; 7(4):386-390

7. Ohara H, Ito K, Iida H, Matsumoto H. Improvement in the moisture content of the stratum corneum following 4 weeks of collagen hydrolysate ingestion. Nippon Shokuhin Kogaku Kaishi 2009; 56:137-145

8. Beguin A. A novel micronutrient supplement in skin aging: a randomized placebo-controlled double-blind study. J Cosmet Dermatol 2005; 4(4):277-284

9 . Gimenez A, Conesa A, Benito P. Estudio piloto del efecto del hidrolizado de colágeno por vía oral sobre las arrugas dérmicas en mujeres posmenopáusicas. Octubre 2007.

10. Arquer A, Pujol P. Ejercicio físico en la Tercera Edad (Efecto de un suplemento dietético sobre la movilidad articular). Revista Española de Medicina de la Educación Física y el Deporte. 1996; 5 (3):121-128

11. Zuckley L et al. Collagen hydrolysate improves joint function in adults with mild symptoms of osteoarthritis of the Knee. Med Sci Sports Exerc. 2004; 36 (5):153-154

12. Benito-Ruiz P et al. A randomized controlled trial on the efficacy and safety of a food ingredient, collagen hydrolysate, for improving joint comfort. Int J Food Sci Nutr 2009; 60 (S2): 99-113

13. Clark KL et al. 24- week study on the use of collagen hydrolysate as a dietary supplement in athletes with activity-related joint pain. Current Medical Research and Opinions 2008; 24 (5):1485-1498

14. Adam M. Therapie der Osteoarthrose. Welche Wirkung haben Gelatinepräparate? Therapiewoche 1991; 38:2456- 2461

15. Adam M, Spacek P, Hulejova H, Galianova A, Blahos J. Postmenopausal osteoporosis. Treatment with calcitonine and a diet rich in cartilage proteins. Cas Lèk ces 1996; 135:74-78

16 Mehta-Ambalal SR. Neocollagenesis and Neoelastinogenesis: From the Laboratory to the Clinic. J Cutan Aesthet Surg. 2016;9(3):145-151. doi:10.4103/0974-2077.191645

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