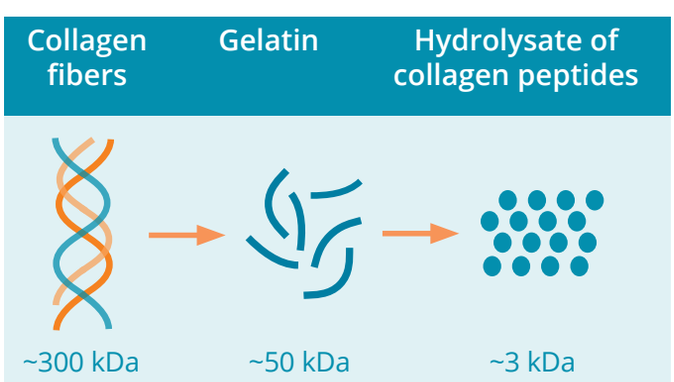
SUMMARY

- 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 who choose an active lifestyle. In recent years, consumers worldwide trend towards improving physical fitness and counteract the effects of aging. In this context, collagen hydrolysate (CH) has been discussed as food ingredient that promotes overall mobility as well as healthy aging. Evidence-based, innovative CH products that tap into this key consumer trend will continue to gain success in the food ingredient market.



Consisiting of small peptides with a molecular average molecular weight of 3 kDa, CH is produced from gelatinization and subsequent enzymatic hydrolysis of native collagen, which is found in rich collagenic animal tissues.

This short review provides 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.

KEYWORDS

Collagen hydrolysate, collagen peptides, ageing, osteoarthritis, osteoporosis, joint pain, fitness, nutraceutical, nutricosmetic.

RESEARCH

Bioavailability: In a digestibility study, CH 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 (^{14}C) as tracer showed that after intake the hydrolized collagen reaches muscles, joints, bones and cartilage where it remains while disappearing 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 CH is capable of fighting dermal ageing.

Joints: Several clinical studies support the ability of CH 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] A clinical trial investigated the effects of Viscofan's CH COLLinstant® in combination with Vitamin C as daily supplement in osteoarthritis patients. The treatment was effective in reducing pain, inflammation, and analgesic consumption, accompanied by an increase in joint function and overall quality of life.[14]

Bones: In a double-blind, randomized clinical study, 94 women diagnosed with postmenopausal osteoporosis and treated with intramuscular calcitonin received a daily supplement of collagen hydrolysate or placebo for six months.[15,16] The effect of the combined collagen hydrolysate and calcitonin treatment in improving osteoporosis symptoms was clearly stronger than that of calcitonin therapy alone.

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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.[17]

Conclusion: The current body of literature supports that 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. CH may be useful in preventing or slowing down degenerative diseases like osteoarthritis or osteoporosis and in counteracting the effects of aging on joints and skin.

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 and formulations to ensure optimal digestibility, safety, and bioavailability.

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