The fate of orally ingested collagen-like peptides

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Collagen is the most abundant protein in vertebrates, whose sequence is composed of Gly-X-Y triplet repeats. Three polypeptide chains intertwine with one other to form the triple helix. Gelatin, the thermal denatured collagen and its hydrolysates (commercially referred as "collagen peptides") can be often found in foods and dietary supplements. However, the relationship between collagen’s triple-helical structure and its digestion/absorption/excretion efficacy in the gastrointestinal tract remains unclear.

In our previous study, we found that the intravenously administered collagen-like triple-helical peptides were quantitatively excreted into urine without metabolism [1].

In this research, we examined the fate of orally administered collagen-like peptides in rats by quantitative mass-spectroscopic analysis of urine and fecal extracts.

A peptide forming stable triple helix was excreted as its intact form in feces. In contrast, a peptide with less conformational stability was not detected in feces or urine, probably due to degradation/absorption.

The result indicates that the collagen triple-helical structure has remarkable stability in the gastrointestinal tract.


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