

## 〈シンポジウム〉

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## コラーゲンペプチドの効果のメカニズム

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### **Mechanism for Beneficial Effect of Collagen Peptide upon Ingestion**

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#### **Abstract**

Collagen is a main protein of extracellular matrix and has triple helix structure. Heat treatment of collagen with water converts triple helix structure into globular structure. The denatured collagen, gelatin, can be digested with protease. The gelatin hydrolysate or collagen peptide has been prepared and used as food ingredient. Human trials and animal experiments have demonstrated that oral administration of collagen peptide improves skin condition and also enhances healing of pressure ulcers. After ingestion of 10 g of collagen peptides, hydroxyproline (Hyp)-containing peptide increases to approximately 10-40  $\mu\text{M}$  in human peripheral blood. Hyp-containing peptide is also generated in cutaneous wound healing site by degradation of endogenous collagen. It has been demonstrated that Pro-Hyp, a main endogenous and food-derived collagen peptide in body, triggers growth of fibroblasts expressing mesenchymal stem cell marker, p75NTR, on collagen gel, while it does not initiate growth of fibroblasts without p75NTR. Fibroblasts from tissue stem cells distributing subcutaneous layer rather than those from healthy cutaneous tissues infiltrate wounds and play crucial role in wound healing. Thus, endogenous and food-derived Pro-Hyp can enhance growth of fibroblasts in wound healing site without affecting quiescent fibroblasts in healthy tissue.

**Key words:** collagen peptide, Pro-Hyp, fibroblast, mesenchymal stem cell, wound healing.