

Biochemical characteristics of collagen in bivalve molluscs

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Recent works on collagen in bivalve molluscs were reviewed, mainly focusing on our data concerning biochemical characteristics of mantle collagen in two bivalve species, Japanese scallop *Patinopecten yessoensis* and Pacific oyster *Crassostrea gigas*. A part of collagen could be obtained in intact form by extracting crude connective tissue fractions with 4M guanidine hydrochloride (G/HCl) solution for both species. Isolation of the constituent α components in the G/HCl - soluble collagen (GSC) was tried for Japanese scallop. The GSC showed four α chain-sized bands, named **a**, **b**, **c**, and **d** chains, on SDS-PAGE. The chains **a** and **b** were successfully isolated by phosphocellulose column chromatography at pH4.8 or pH6.8, and suggested to be genetically distinct from each other by amino acid analyses. The chains **c** and **d**, however, could not be separated from each other because of their behavioral identity on the present chromatographic conditions. On the other hand, the quantitatively major collagen and its constituent α chains ($\alpha 1$ and $\alpha 2$) were isolated from the pepsin-solubilized collagen from the mantle of Pacific oyster by differential salt precipitation or phosphocellulose column chromatography. The α chains were demonstrated to be genetically distinct from each other by peptide mapping and amino acid analyses. The amino acid composition calculated from those of the $\alpha 1$ and $\alpha 2$ chains in 2:1 ratio coincided well with that of the major collagen. These results suggest that the major collagen in the Pacific oyster mantle may have a heterotrimeric structure $(\alpha 1)_2 \alpha 2$.