

## Biochemical characteristics of collagen in bivalve molluscs

Shoshi Mizuta

Department of Marine Bioscience, Fukui Prefectural University

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  $\alpha$  components in the G/HCl - soluble collagen (GSC) was tried for Japanese scallop. The GSC showed four  $\alpha$  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  $\alpha$  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  $\alpha$  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  $(\alpha 1)_2 \alpha 2$ .