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Fatty acids composition of the most common bivalves in Korean diet

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Consumption of bivalve molluscs, such as oysters, mussels, clams and scallops, makes a significant part of the daily Korean diet. Bivalves provide high quality proteins with all the dietary-essential amino acids, lipids, vitamins, minerals and other bioactive nutrients, which offer a variety of health benefits to the consumer [1]. This food contains less than 5 percent of total fat, so it is considered a low-fat food. Beside the amount of total fat, the proportions of saturated, monounsaturated and polyunsaturated fatty acids (FA) (S, M and P, respectively), as well as ratio of n-3 (ω -3) and n-6 (ω -6) P in food are very important for the health diet [2].

Fourteen species of bivalves *Anadara broughtonii* (AB), *Ruditapes philippinarum* (Manila clam (RP)), *Tegillarca granosa* (TG), *Pecten yessoensis* (Yesso scallop (YS), *Argopecten* spp. (small scallop (SS)), *Chlamys farreri farreri* (CF), *Cyclina sinensis* (CS), *Leukoma jedoensis* (LJ), *Mytilus californianus* (MCa) *Mytilus galloprovincialis* (MG), *Mareatrix lusoria* (ML), *Mactra quadrangularis* (MQ), *Sinovacula constricta* (SC) and *Crassostrea gigas* (Pacific oyster (PC)) were bought in two fish markets in Incheon, Korea, in order to determine FA composition using GC/EI-MS of fatty acid methyl esters (FAME). The FAME were identified by comparing their retention times with those of the FAME standards or by comparing their mass spectra with those stored in the NIST Mass Spectral Library.

In the bivalve samples, 43 different FA were identified, of which 10 were S, 12 M and 13 P, other FA were 7 methyl-FA and 1 hydroxyl-FA. The P/S ratio and ω -6/ ω -3 P ratio are the most significant markers of lipid composition in a healthy diet and both should be close to 1 [3]. Among analysed species, only YS and SS have P/S ratio close to 1 (1.20 and 1.16, respectively), while other species have value between 0.07 and 0.73. The obtained values for ω -6/ ω -3 P ratio were from 0.008 to 0.55, which indicates that bivalve molluscs are the valuable source of ω -3 P (EPA and DHA). These ω -3 P play important roles in growth, development, and maintenance of health.

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