# Pharmacokinetic model of daily selenium intake from contaminated seafood in Taiwan.

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## Abstract

Contaminated seafood has been reported as an important source of human exposure to metals in Taiwan. Seafood represents a non-negligible source of selenium in the human diet. This study was designed to determine the concentration of selenium in different types of seafood and predict the concentration of selenium in the blood of Taiwanese using a one-compartment steady-state pharmacokinetic (PK) model. Samples involved three subgroups, including fish, crustaceans and bivalve molluscs. Quantitative analysis for selenium was performed using an ICP-AES (Perkin Elmer) instrument. Selenium concentrations in seafood ranged from 0.63 to 2.01 microg/g wet wt. The highest selenium concentration found in fish was 2.01+/-0.36 microg/g wet wt in Salmo salar Linnaeus. In general, selenium concentration increased in the order of bivalve molluscs<crustacean<fish. The daily selenium intakes resulting from a high-seafood diet and an average diet were 145.2 and 60.2 microg/day, respectively. Daily selenium intake from seafood alone is higher than the US recommended daily allowance (RDA) of 55 microg/day and the World Health Organization (WHO) normative requirement of 40 microg/day. From PK model estimates, the concentrations of selenium in the blood of a typical seafood consumer and a high-seafood consumer were approximately 93 and 224 microg/l based on daily seafood intake of 60.2 and 145.2 microg/day, respectively.