

Mussel Watch: a review of Cu and other metals in various marine organisms in Taiwan, 1991-1998

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摘要

Abstract

This study presents the distribution of Cu, Zn, Pb, Cd, Hg and As in various marine organisms collected along the western coast of Taiwan from 1991 to 1998, and also evaluates the time variation of Cu in oysters before (1980-85) and after (1986-98) the "green oyster" incident. The results show that relatively high geometric mean (GM) concentrations of Cu, Zn, Pb, Cd, As and Hg were generally found in *Crassostrea gigas* (Cu=229 g/g, Zn=783 g/g), *Gomphina aegialtera* (Pb=30.3 g/g), *Tegillarca granosa* (Cd=2.85 g/g), *Thais clavigera* (As=96.9 g/g) and *Parapenaeopsis cornuta* (Hg=1.35 g/g), respectively. Especially, maximum Cu and Zn concentrations (GM=229 and 783 g/g, respectively) in oysters (*C. gigas*) from different culture areas were much higher than those of the other organisms by about 1.13-458 and 2.40-63.7 times, respectively. Similarly, rock-shells (*Thais clavigera*) had a high capacity for accumulating Cu (GM=202 g/g) and Zn (GM=326 g/g) under the same physico-chemical conditions. The highest GM Cu and Zn concentrations of 1108 (range from 113 to 2806) and 1567 (range from 303 to 3593) g/g were obtained in oysters from the Hsiangshan coastal area, one of the most important oyster culture areas in Taiwan. However, the highest GM Cd and As concentrations of 6.82 and 19.3 g/g were found in oysters from the Machu Islands. Mean Cu concentrations in the oysters from the Erhjin Chi estuary declined from 2194 \pm 212 g/g in 1986-90 to 545 g/g (GM) in 1991-96. In the Hsiganshan area, GM Cu concentrations of 909 g/g (1991-96) and 1351 g/g (1997-98) in oysters were significantly higher than those of 201 g/g (1980-85) and 682 g/g (1986-90). The gradually increasing levels of Cu and Zn in the oysters from the Hsiangshan area have been observed year by year.