

Khwanruthai Chawmuangkhong 2012: Heavy Metals Accumulation and Microanatomy in Spiral Melongena *Pugilina cochlidium* (Linnaeus, 1758). Master of Science (Zoology), Major Field: Zoology, Department of Zoology. Thesis Advisor: Assistant Professor Smarn Kaewviyudth, Ph.D. 94 pages.

Levels of the metals Chromium, Copper, Iron, Lead, Nickel, Zinc, Cadmium and Cobalt were determined in water, soil and soft tissues of the spiral melongena, *Pugilina cochlidium*, from the mangrove area in Ban Khun Tein District, Bangkok, till the estuarine area of Klong Pittayalongkorn, Muang District, Samut Sakhon Province. The analyses of elements were performed by inductive coupled plasma-optic emission spectroscopy (ICP-OES) technique. Respectively, metal concentrations found in water varied from 0-3.658, 0-0.852, 0.069-1.502, 0-1.125, 0-2.41, 0.016-12.887, 0-0.03 and 0-1.527 mg/l. Zinc was found to be significantly ($p < 0.05$) highest average concentration, 9.824 ± 2.811 mg/ml, in December. In soil, the concentrations respectively varied from 0.018-1.463, 0-0.038, 6.638-42.058, 0-0.226, 0.005-1.210, 0-1.924, 0-0.008 and 0-0.663 mg/kg. The same as in water, zinc was still be the highest average concentration, 37.8 ± 2.47 mg/kg, which showed significantly ($p < 0.05$) in June. In mollusk tissues, the concentrations varied from 0.016-1.071, 0.010-0.749, 0.245-6.655, 0-0.137, 0-0.308, 0.099-0.382, 0-0.015 and 0-0.054 mg/kg dry weight, respectively. Significantly, the highest average concentration in tissue ($p < 0.05$) was iron, 6.655 ± 2.896 mg/kg, in December. The correlation between metals and heavy metals in soil and tissues was positively correlated with cadmium, chromium and nickel ($p < 0.01$) but lead was $p < 0.05$. All those concentrations of metals and heavy metals accumulated in tissues of investigated species were also lower than the maximum levels set by Public Health Ministry of Thailand and European Union. The microscopic study of all interested tissues revealed mildly severe of some pathologic lesions. Hyperplasia, atrophy and necrosis of gill lamellae epithelial cells were observed, and also vacuolation in goblet cells. Necrotic and atrophic cells were also noticed in the epithelial lining of stomach, digestive cells and nephrocytes.

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Thesis Advisor's signature

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