

HEAVY METAL CONCENTRATIONS IN THE RAZOR CLAMS (*SOLEN SPP*) FROM MUARA TEBAS, SARAWAK

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Abstract

The razor clams (*Solen spp*) or locally known as 'ambal' in Sarawak collected from Muara Tebas were studied for their heavy metals contents in tissues and shells. Sediment samples were also tested for their metal contents. Concentrations of Pb, Fe, Zn, Cu, Cd and Mn were determined by using Flame Atomic Absorption Spectrophotometer (FAAS). Tissues of razor clams showed highest concentrations of Fe and Zn, while shells accumulated highest concentrations of Pb and Mn. The lowest metal concentrations found were Cu and Cd. In general, the levels of metals in 'ambal' were within the permissible limit recommended by international standard, the Food and Agricultural Organization (FAO). However, the study revealed that the sediments at Muara Tebas fall under the category of slightly polluted (for Pb) when compared to the guidelines suggested by United States Environment Protection Agency (USEPA).

Abstrak

Razor clam (*Solen spp*) atau lebih dikenali sebagai ambal di Sarawak telah dipungut dari Muara Tebas untuk kajian kandungan logam berat dalam bahagian tisu dan cengkerangnya. Sampel sedimen juga telah dikaji kandungan logam beratnya. Kepekatan logam Pb, Fe, Zn, Cu, Cd dan Mn telah ditentukan dengan menggunakan Spektroskopi Serapan Atom Nyala (FAAS). Bahagian tisu ambal mengandungi kepekatan Fe dan Zn yang tertinggi manakala cengkerang pula menunjukkan kepekatan Pb dan Mn yang paling tinggi. Kepekatan logam yang paling rendah ialah Cu dan Cd. Secara keseluruhannya, tahap kepekatan logam dalam ambal berada dalam had yang disyorkan oleh piawai *Food and Agricultural Organization* (FAO). Walau bagaimanapun, kajian ini menunjukkan bahawa sedimen di Muara Tebas berada dalam kategori sedikit tercemar (untuk Pb) apabila perbandingan dibuat dengan piawai yang disyorkan oleh *United States Environment Protection Agency* (USEPA).

Introduction

Various species of edible bivalve mollusks such as clams, oyster and cockles are found on the mangrove mudflats and intertidal sandy beaches in Peninsula Malaysia as well as Sarawak. Razor clam (*Solen spp*) or locally known as "ambal" is found abundantly in the intertidal sandy beaches in Kuching and Samarahan Division of Sarawak. There are three different species of Ambal in the genus *Solen* that commonly found in Sarawak [1]. The three species are *Solen corneus*, *Solen species* and *Solen vagina* and they are locally known as 'Ambal Biasa', 'Ambal Jernang', and 'Ambal Riong' respectively.

Heavy metals pollution has been a hot issue in environmental studies for many years. Even though, metals occurs naturally in the environment but due to the anthropogenic inputs which originate from various human activities the concentrations have been rising. Heavy metals tend to accumulate in the food chain and eventually will be consumed by organisms. Bivalve mollusks are well-known to accumulate heavy metals and have been widely used as bioindicator for monitoring heavy metal pollution in aquatic environment [2-4]. There is very little documented information available about the metal contents in 'ambal' despite the popularity as a source of seafood item in Sarawak. Owing to limited studies on 'ambal', various aspects on 'ambal' are still unexplored such as the feeding behavior, biology and population dynamics. A study was conducted on the stock assessment and some biology perspective of 'ambal' [5]. Some work was also done on the bacterial density and quality of water in 'ambal' from Asajaya Laut and Kampung Buntal, Sarawak [6].