The Living Fossil (Horseshoe crab)

Kamaruzzaman Yunus
Akbar John
Ahmed Jalal Khan Chowdhury
Zaleha Kassim

IIUM PRESS

INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

The Living Fossil

(Horseshoe crab)

Editors,

Kamaruzzaman Yunus

Akbar John

Ahmed Jalal Khan Chowdhury

Zaleha Kassim

IIUM Press

Published by:
IIUM Press
International Islamic University Malaysia

First Edition, 2011

Perpustakaan Negara Malaysia Cataloguing-in-Publication Data

Kamaruzzaman Yunus
The Living Fossil (Horseshoe crab)
Kamaruzzaman Yunus
Include index
Bibliography: p.
ISBN

ISBN: 978-967-418-042-3

Member of Majlis Penerbitan Ilmiah Malaysia – MAPIM
(Malaysian Scholarly Publishing Council)

Printed by :
IIUM PRINTING SDN.BHD.
No. 1, Jalan Industri Batu Caves 1/3
Taman Perindustrian Batu Caves
Batu Caves Centre Point
68100 Batu Caves
Selangor Darul Ehsan

Table of Contents

CHAPTER – 17

Bioaccumulation of some essential metal concentration in Malaysian horseshoe crabs (*Tachypleus gigas*)

Kamaruzzaman, B.Y., Aqilah, M., Akbar John, B.

Institute of Oceanography and Maritime studies (INOCEM), Kulliyyah of Science, International Islamic University Malaysia, Jalan Sultan Ahmad Shah, Bandar Indera Mahkota, 25200, Kuantan Pahang, Malaysia

Abstract

We examined the selected essential metals (Fe and Zn) accumulative concentrations in different body parts of Malaysian horseshoe crabs [*Tachypleus gigas* (Muller, 1785)]. Metal accumulation levels were determined using Inductively Coupled Plasma Mass Spectrometry (ICP-MS). Average concentration (μg g^{-1} wet weight) of iron (Fe) and Zinc (Zn) were observed in gill tissue (1336.73±2.08 ppm) and apodeme (921.11±8.12 ppm) respectively. The lowest concentrations of metals were observed in gut (Fe = 556.61 ppm) and mouth (Zn = 605.36 ppm) tissue portions. Results clearly showed that bioaccumulation of both the essential metals were higher in the body parts but lower than the maximum permissible limit set by the national and international consortia. Statistical predictions revealed that bioaccumulation of metals were not significantly influenced by weight, total length and carapace width of the animal.

Key words: Bioaccumulation, Essential metals, horseshoe crabs, Nesting ground, apodeme.

Introduction

Horseshoe crabs are one of the unique creatures living on earth by remarkably retaining their genetic makeup unchanged for more than more than 200 million years (Walls *et al.*, 2002: Hurton and Berkson, 2004). Only 4 species of horseshoe crab are distributed throughout the planet earth among which 3 species such as *Trachypleus gigas*, *T. tridentatus* and *Carcinoscorpius rotundicauda* inhabit south East Asian countries. *Limulus polyphemus* distribution is more restricted towards America especially their abundance were noted in Mexican coast, Daleware bay (Walls *et al.*, 2002). More interestingly, among the 4 extant