

UNIVERSITI TEKNOLOGI MARA

**HEALTH RISK ASSESSMENT OF HEAVY METALS VIA DIETARY
INTAKE OF SHRIMP (*Litopenaeus vannamei*) FROM
SELANGOR.**

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Project submitted in fulfilment of the requirements

for the degree of

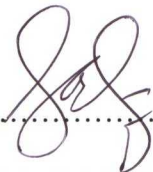
Bachelor in Environmental Health and Safety (Hons.)

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Declaration of Student

Project entitled “Health Risk Assessment of Heavy Metals via Dietary Intake of Shrimp (*Litopenaeus vannamei*) from Selangor.” is a presentation of my original research work. Whenever contribution of others are involved, every effort is made to indicate this clearly, with due reference to literature, and acknowledgement of collaborative research and discussion. The project was done under the guidance of Madam Shantakumari a/p Rajan as Project Supervisor. It has been submitted to the Faculty of Health Science in partial fulfilment of the requirement for the degree of Bachelor in Environmental Health and Safety (Hons.)

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TABLE OF CONTENTS

TITLE PAGE	i
DECLARATION OF STUDENT	ii
APPROVAL BY SUPERVISOR	iii
ACKNOWLEDGEMENT	iv
TABLE OF CONTENTS	v
LIST OF TABLES	viii
LIST OF FIGURES	ix
LIST OF PLATES	x
LIST OF APPENDICES	xi
LIST OF ABBREVIATION	xii
ABSTRACT	xiii
CHAPTER ONE : INTRODUCTION	
1.1 Background of study	1
1.2 Problem Statement	4
1.3 Study Justification	6
1.4 Objective	6
1.4.1 General Objective	6
1.4.2 Specific Objectives	6
1.5 Conceptual framework	7
1.5.1 Conceptual definition	8
1.5.2 Operational definition	8
CHAPTER TWO : LITERATURE REVIEW	
2.1 <i>Litopenaeus vannamei</i> (White leg shrimp)	11
2.2 Shrimp farming	11
2.3 Heavy metal	11
2.4 Heavy metals in shrimps	12
2.5 Heavy metals in marine organism	13

ABSTRACT

Litopenaeus vannamei is native to the Eastern Pacific coast from Sonora, Mexico. It lives in tropical marine areas where water temperatures are normally $>20^{\circ}\text{C}$ throughout the year. Since anthropogenic pollutants are the main sources of heavy metal contaminants in the ocean, the pollutants generated can cause accumulation of heavy metal in shrimp through their feed, seawater and/or sediment that may exceed the levels of safety for consumers. Therefore it is important to carry out a study to determine heavy metal concentrations accumulated in the shrimp species. Samples of *L. vannamei* were collected from twenty local markets throughout Selangor during April until May 2015. Four heavy metals; Cd, Cu, Pb and Zn, whole body parts and both months were analysed. Samples were digested according to Iqbal et al., 2002 acid-digestion method and then Cd, Cu, Pb, Zn concentrations were determined by Flame Atomic Absorbance Spectrophotometry (FAAS). The results showed heavy metal concentrations in whole body in descending order as follows: $\text{Zn} > \text{Cu} > \text{Pb} > \text{Cd}$. However, lead concentrations in all local market were high and exceed Food Regulation 1985 and Food Standard Code for Australia and New Zealand (Shellfish) and some of cadmium concentration are also exceeding the legal requirement. In addition, the heavy metal concentration in each local market are varies with highest are Banting wet market (Cu: 48.504 mg/kg), Sg. Besar wet market (Cd: 3.082 mg/kg), Shah Alam section 16 (Pb: is 4.8665 mg/kg) and Serendah wet market (Zn: 76.9915 mg/kg). There were no significant differences between the heavy metal concentration in the species and time samples collected ($P > 0.05$). Health risk assessment found out that there are likely potential adverse health effect that is associate with the exposure of copper, cadmium and lead ($\text{HI} > 1$) and there is no adverse health effect associated with the exposure of zinc concentration ($\text{HI} < 1$) via shrimps consumption.

KEY WORDS: Cadmium/ Lead/ Copper/*Litopenaeus vannamei*/ Selangor