

CONCENTRATION OF AN IONIC POLYMER IN
GENERALIZED POLYMER SOLUTIONS
AND POLYMERIZATION SYSTEMS

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CONCENTRATION OF SELECTED HEAVY METALS IN
SEAHORSE, *HIPPOCAMPUS TRIMACULATUS* AND
HIPPOCAMPUS SPINOSSISIMUS

BY

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PENGAKUAN DAN PENGESAHAN LAPORAN
PROJEK PENYELIDIKAN I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk:

Concentration of selected heavy metals in seahorse, *Hippocampus trimaculatus* and *Hippocampus spinosissimus* oleh Thanalechumy a/p Manickam, nombor matrik UK6617 telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Kimia sebagai memenuhi sebahagian daripada keperluan memperoleh Ijazah Sarjana Muda Sains (Sains Kimia), Fakulti Sains dan Teknologi, Kolej Universiti Sains dan Teknologi Malaysia.

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TABLE OF CONTENTS

| | |
|--|-----------|
| TITLE PAGE | |
| APPROVAL FORM | ii |
| ACKNOWLEDGEMENT | iii |
| TABLE OF CONTENTS | iv |
| LIST OF TABLES | vi |
| LIST OF FIGURES | vii |
| LIST OF ABBREVIATIONS | viii |
| LIST OF APPENDIX | ix |
| ABSTRACT | x |
| ABSTRAK | xi |
| | |
| 1.0 INTRODUCTION | 1 |
| 1.1 Importance of Study | 3 |
| 1.2 Research Objectives | 3 |
| | |
| 2.0 LITERATURE REVIEW | 4 |
| 2.1 South China Sea | 4 |
| 2.2 Seahorse | 4 |
| 2.2.1 Definition of Seahorse | 4 |
| 2.2.2 Morphology | 5 |
| 2.2.3 Reproduction | 6 |
| 2.2.4 Diet and Habitat | 6 |
| 2.2.5 Uses of Seahorse | 7 |
| 2.2.6 <i>Hippocampus spinosissimus</i> | 8 |
| 2.2.7 <i>Hippocampus trimaculatus</i> | 9 |
| 2.3 Heavy metals | 9 |
| 2.3.1 Iron (Fe) | 10 |
| 2.3.2 Copper (Cu) | 11 |
| 2.3.3 Zinc (Zn) | 12 |
| 2.3.4 Aluminium (Al) | 13 |
| 2.3.5 Manganese (Mn) | 13 |
| 2.4 Heavy metal analysis | 14 |
| | |
| 3.0 METHODOLOGY | 19 |
| 3.1 Sampling | 19 |
| 3.2 Apparatus Preparation | 19 |
| 3.3 Sample preparation | 19 |
| 3.4 Sample digestion | 20 |
| 3.5 Spiking of sample | 21 |
| 3.5 Heavy Metal Analysis | 21 |
| 3.6 Statistical analysis | 21 |

| | | |
|------------|--|-----------|
| 4.0 | RESULTS | 22 |
| 4.1 | Recovery Test | 22 |
| 4.2 | Calibration Graph For Determining Al, Cu, Mn, Fe and Zn | 23 |
| 4.3 | <i>Hippocampus trimaculatus</i> | 29 |
| 4.4 | <i>Hippocampus spinosissimus</i> | 30 |
| 5.0 | DISCUSSION | 36 |
| 6.0 | CONCLUSION | 41 |
| | REFERENCES | 42 |
| | APPENDICES | 45 |
| | CURRICULUM VITAE | 55 |

LIST OF TABLES

| | | Page |
|-----------|--|------|
| Table 4.1 | Percentage of recovery for all the heavy metals | 22 |
| Table 4.2 | Intensity and standard solution concentration for Calibration graph of Al | 24 |
| Table 4.3 | Intensity and standard solution concentration for Calibration graph of Cu. | 24 |
| Table 4.4 | Intensity and standard solution concentration for Calibration graph of Mn. | 24 |
| Table 4.5 | Intensity and standard solution concentration for Calibration graph of Fe. | 25 |
| Table 4.6 | Intensity and standard solution concentration for calibration graph of Zn. | 25 |

LIST OF FIGURES

| | | Page |
|------------|---|------|
| Figure 4.1 | Calibration graph of Al | 26 |
| Figure 4.2 | Calibration graph of Cu | 26 |
| Figure 4.3 | Calibration graph of Mn | 27 |
| Figure 4.4 | Calibration graph of Fe | 27 |
| Figure 4.5 | Calibration graph of Zn | 28 |
| Figure 4.6 | Concentration of metals in <i>Hippocampus trimaculatus</i> | 32 |
| Figure 4.7 | Concentration of metals in <i>Hippocampus spinosissimus</i> | 33 |
| Figure 4.8 | Concentration of Al, Cu, Mn, Fe and Zn in male and female of <i>Hippocampus trimaculatus</i> | 34 |
| Figure 4.9 | Concentration of Al, Cu, Mn, Fe and Zn in male and female of <i>Hippocampus spinosissimus</i> | 35 |

LIST OF ABBREVIATIONS AND SYMBOLS

| SYMBOL | MEANING |
|------------------|--|
| % | Percentage |
| ° C | Degree Celsius |
| µm | Micrometer |
| Al | Aluminium |
| cm | Centimeter |
| Cu | Copper |
| FAAS | Flame Atomic Absorption Spectrometry |
| Fe | Iron |
| g | Gram |
| HNO ₃ | Acid Nitric |
| ICP-AES | Inductively Coupled Plasma-Atomic Emission Spectroscopy |
| ICP-MS | Inductively Coupled Plasma-Mass Spectrometry |
| ICP-OES | Inductively Coupled Plasma-Optical Emission Spectroscopy |
| LC | Liquid Chromatography |
| Mn | Manganese |
| ug/g | Microgram per gram |
| Zn | Zinc |

LIST OF APPENDICES

| | | Page |
|-------------|---|------|
| APPENDIX 1 | Result for T-test between males and females <i>Hippocampus trimaculatus</i> | 45 |
| APPENDIX 11 | Result for T-test between males and females <i>Hippocampus spinosissimus</i> | 50 |

ABTRACT

A study on the heavy metal concentrations in two seahorse species, *Hippocampus trimaculatus* and *Hippocampus spinosissimus* were carried out. The seahorse samples were separated according to its length and sex. Concentrations of Fe, Cu, Mn, Al and Zn were determined using nitric acid digestion method and then analyzed with Inductively-Coupled Plasma-Optical Emission Spectrometer (ICP-OES). Results showed that the mean concentration of Al and Fe decrease as the length of the seahorse increases. Cu, Zn and Mn do not show any distinct relation between the concentration and the seahorse size. The result from this study does not show any significant difference in concentration of Al, Cu, Zn, Mn and Fe between the males and females in both species.

ABSTRAK

Satu kajian mengenai kepekatan logam berat dalam sampel dua spesis kuda laut iaitu *Hippocampus trimaculatus* dan *Hippocampus spinosissimus* telah dijalankan. Sampel kuda laut telah diasingkan mengikut panjang badan and jantina. Kepekatan Fe, Cu, Mn, Al and Zn telah ditentukan dengan menggunakan teknik penghadaman asid nitrik dan dianalisa dengan menggunakan Gandingan Aruhan Plasma-Spektrometer Pemancaran Optik (ICP-OES). Keputusan menunjukkan kepekatan purata Al dan Fe berkurangan apabila panjang badan kuda laut bertambah. Cu, Zn dan Mn tidak menunjukkan sebarang hubungan yang jelas di antara kepekatan dan saiz sampel kuda laut. Keputusan ini juga tidak menunjukkan sebarang perubahan signifikan dalam kepekatan Al, Cu, Zn, Mn and Fe di antara kuda laut jantan dan betina bagi kedua-dua spesis.