

STUDY ON THE EFFICIENCY OF CONVERSION
OF FEEDED FOOD BY THE SEAHORSE
(*Hippocampus kuda*)

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A STUDY ON THE EFFICIENCY OF CONVERSION
OF DIGESTED FOOD BY THE SEAHORSE
(*Hippocampus kuda*)

By

Ch'ng Bee Im

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Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk:

A Study On The Efficiency Of Conversion OF Digested Food By The Seahorse (*Hippocampus kuda*) oleh Ch'ng Bee Im diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Samudera sebagai memenuhi sebahagian daripada keperluan memperoleh Ijazah Sarjana Muda Sains (Biologi Marin), Fakulti Sains dan Teknologi, Kolej Universiti Sains dan Teknologi Malaysia.

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TABLE OF CONTENTS

| | Page |
|---|-------------|
| APPROVAL AND CERTIFICATION FORM | ii |
| ACKNOWLEDGEMENT | iii |
| TABLE OF CONTENTS | iv |
| LIST OF FIGURES | viii |
| LIST OF ABBREVIATIONS | x |
| LIST OF APPENDICES | xi |
| ABSTRACT | xii |
| ABSTRAK | xiv |
| 1.0 INTRODUCTION | |
| 1.1 General of Seahorse and Its Food Conversion Efficiency | 1 |
| 1.2 Objectives | 5 |
| 2.0 LITERATURE REVIEW | |
| 2.1 Taxonomy of <i>Hippocampus Kuda</i> | 6 |
| 2.2 Morphology and physiology of <i>H.kuda</i> | 6 |
| 2.3 Rearing and Feeding Methods | 10 |
| 2.4 Seahorse feeding | 12 |
| 2.5 Factors Affecting Feed Utilization | 13 |
| 2.6 Digestive system of seahorse | 14 |
| 2.7 Importance of Macronutrients | 15 |
| 2.7.1 Protein | 15 |
| 2.7.2 Fat | 16 |
| 2.8 Fecal Collection Methods | 17 |

| | | |
|------|--|----|
| 2.9 | Analyses of Diets and Fecal | 18 |
| 2.10 | Factors Lead to Over-estimation of Digestibility (Protein and Fat) of Seahorse from the Pipetting Fecal | 19 |

3.0 METHODOLOGY AND MATERIALS

| | | |
|-----|--|----|
| 3.1 | Rearing Methods | 20 |
| 3.2 | Feeding Methods | 22 |
| 3.3 | Fecal Collection (Pipetting Method) | 23 |
| 3.4 | Experimental Methods | 24 |
| | 3.4.1 Fat Test (Soxtec ® Avanti 2055 System) | 24 |
| | 3.4.2 Crude Protein Test (Kjeltec® System) | 26 |
| 3.5 | Calculations | 27 |
| | 3.5.1 Moisture | 27 |
| | 3.5.2 Dry Matter | 27 |
| | 3.5.3 Crude Fat | 27 |
| | 3.5.4 Crude Protein | 27 |
| | 3.5.5 Specific Growth Rate (SGR) | 28 |
| | 3.5.6 Food Conversion Ratio (FCR) | 28 |
| | 3.5.7 Food Conversion Efficiency | 28 |
| 3.6 | Data Analysis | 29 |

| | |
|---|----|
| 4.0 RESULTS | 30 |
| 4.1 Nutrients Composition of the Test Diets | 30 |
| 4.2 Food Conversion Ratio of Feeds (Test Diets) | 32 |
| 4.3 Food Conversion Efficiency of Feeds (Test Diets) | 34 |
| 4.4 Specific Growth Rate (SGR) Among Different Sexual of <i>H.kuda</i> of Different Test Diets | 35 |
| 4.4.1 The Growth in Standard Length (cm) of <i>H.kuda</i> for Test Diets | 37 |
| 4.4.2 Growth in Wet Weight (g) of <i>H.kuda</i> for Test Diets | 38 |
| 4.5 The Fat Absorption Efficiency (FAE) of <i>H.kuda</i> for Test Diets | 40 |
| 4.6 The Protein Absorption Efficiency (PAE) of <i>H.kuda</i> for Test Diets | 43 |
| 4.7 Mortality Rate of the <i>H.kuda</i> in the Test Diets | 45 |
| 5.0 DISCUSSION | 46 |
| 5.1 Nutrients Composition of the Test Diets | 46 |
| 5.2 Food Conversion Ratio of the Feeds (Test Diet) | 47 |
| 5.3 Food Conversion Efficiency of Feeds (Test Diets) | 48 |
| 5.4 Specific Growth Rate (SGR) Among Different Gender of <i>H.kuda</i> of Different Test Diets | 49 |
| 5.5 The Fat Absorption Efficiency (FAE) of <i>H.kuda</i> for Test Diets | 50 |
| 5.6 The Protein Absorption Efficiency (PAE) of <i>H.kuda</i> for Test Diets | 51 |

| | | |
|------------|---|----|
| 5.7 | Mortality Rate of the <i>H.kuda</i> in the Test Diets | 52 |
| 6.0 | CONCLUSION | 53 |
| 7.0 | LITERATURE CITED | 56 |
| 8.0 | APPENDICES | 59 |
| 9.0 | CURRICULUM VITAE | 93 |

LIST OF FIGURES

| | Page |
|--|-------------|
| Figure 1. Morphology of <i>Hippocampus kuda</i> . | 8 |
| Figure 2. Picture show different gender of <i>H.kuda</i> . | 9 |
| Figure 3. Seahorse standard length measurement. | 11 |
| Figure 4. Frozen shrimp (<i>Penaeus indicus</i>). | 23 |
| Figure 5. Fecal of the seahorses was pipetted directly from each aquarium before the next feeding. | 24 |
| Figure 6. Soxhlet ® Avanti 2055 System applied in fat determination. | 25 |
| Figure 7. Kjeldahl® System that applied in digestion step. | 26 |
| Figure 8. The nutrient composition of the test diet in this study. | 31 |
| Figure 9. Mean FCR of test diets among the different sexes of <i>H.kuda</i> . | 33 |
| Figure 10. Mean FCE of test diets among the different sexes of <i>H.kuda</i> . | 35 |
| Figure 11. Mean of SGR of <i>H.kuda</i> fed with two different test diet. | 36 |
| Figure 12. The growth of average standard length (cm) per week of <i>H.kuda</i> for frozen shrimp and frozen shrimp with <i>Artemia</i> combination test diets. | 38 |
| Figure 13. The growth of average wet weight (g) per week of <i>H.kuda</i> for frozen shrimp and frozen shrimp with <i>Artemia</i> combination test diets. | 39 |
| Figure 14. The fat absorption efficiency (FAE) of <i>H.kuda</i> for frozen shrimp and frozen shrimp with <i>Artemia</i> combination test diets. | 41 |
| Figure 15. (a) Seahorse dry fecal sample. (b) Fat extraction sample from the test diet. (c) Fat extraction sample from the fecal. | 42 |

| | |
|---|----|
| Figure 16. The protein absorption efficiency (PAE) of <i>H.kuda</i> for frozen shrimp and frozen shrimp with <i>Artemia</i> combination test diets. | 44 |
| Figure 17. The step of titration to determine the protein percentage in the fecal. | 44 |
| Figure 18. Mortality rate of the <i>H.kuda</i> in the test diets. | 45 |

LIST OF ABBREVIATION

| | |
|-----|-------------------------------|
| g | Gram |
| cm | Centimeter |
| L | Liter |
| °C | Degree Celcius |
| ppt | Part per trillion |
| DO | Dissolved oxygen |
| % | Percentage |
| FCR | Food Conversion Ratio |
| FCE | Food Conversion Efficiency |
| SGR | Specific Growth Rate |
| FAE | Fat Absorption Efficiency |
| PAE | Protein Absorption Efficiency |

LIST OF APPENDICES

| | Page |
|---|-------------|
| Appendix 1. Fat Test (Soxtex ® Avanti 2055 System) | 59 |
| Appendix 2. Crude protein Test (Kjeltex® System) | 62 |
| Appendix 3. Tables show weekly intake of test diets by 30 <i>H.kuda</i> | 65 |
| Appendix 4. Tables show seahorses weight increase of the test diets within 20 weeks studies | 67 |
| Appendix 5. Tables show seahorses standard length increase of the test diets within 20 weeks studies | 71 |
| Appendix 6. Tables show FCR of seahorses in different test diets | 75 |
| Appendix 7. Tables show FCE of seahorses in different test diets | 76 |
| Appendix 8. Tables show SGR of seahorses in different test diets | 77 |
| Appendix 9. Tables show seahorses fecal wet weight and dry weight of the test diets within 20 weeks studies | 78 |
| Appendix 10. Tables show the percentage of fat absorption efficiency (FAE) of seahorses fed with different test diets. | 81 |
| Appendix 10. Tables show the percentage of protein absorption efficiency (PAE) of seahorses fed with different test diets. | 82 |
| Appendix 11. Tables show mortality rate of <i>H.kuda</i> in the test diets | 83 |
| Appendix 12. Statistically Analysis | 85 |

ABSTRACT

The seahorse, *Hippocampus kuda* were investigated for their food conversion ratio (FCR) and food conversion efficiency (FCE) using two types of test diets, frozen shrimp and frozen shrimp with *Artemia* combination. From this study, these test diet can be considered as nutritionally balanced as they have high composition of nutrients that are easily digested (protein and fat).

From this study, the FCR and FCE values were not significantly different between males and females and also among the two test diets ($p > 0.05$). The FCE values obtained were not as good as FCE values of other fishes, suggesting that *H.kuda* has an inefficiency digestive system.

Both gender of seahorses produced similar growth response for both test diets. However, the overall growth response was not much, as adult seahorses are known to grow more slowly as they grow larger (Vincent & Sadler unpublished; cited in Vincent, 1996).

The food absorption efficiency (FAE) of *H.kuda* was between 30 % to 40 %. These FAE values were lower than other marine fishes reflecting their inefficiency digestive system.

The protein absorption efficiency (PAE) of *H.kuda* was between 40.5 % - 42.4 %. However, the PAE values may have been overestimated due to the possible leaching of protein from the faecal samples and the degree to which faeces were disturbed.

Though seahorses fed with frozen shrimp showed lower mortality rate than those fed with frozen shrimp with *Artemia* combination test diet, this was due largely to

diseases suffered by the seahorses during 2nd trial due to bad water quality during monsoon season.

ABSTRAK

Dalam kajian ini, *Hippocampus kuda* telah dikaji tentang keberkesanan dan kadar penghadaman makanan untuk dua jenis makanan ujian yang berlainan iaitu udang dan udang yang dicampur dengan *Artemia*. Kedua-dua jenis makanan ini boleh dikatakan sebagai makanan yang seimbang untuk *H.kuda* ini kerana mempunyai kandungan protein dan lemak yang agak tinggi.

Daripada kajian ini, nilai-nilai FCR dan FCE antara jantan dan betina *H.kuda* serta antara kedua-dua jenis makanan adalah sama ($p > 0.05$). Nilai FCE *H.kuda* adalah kurang baik jika dibandingkan dengan nilai FCE ikan yang lain disebabkan *H.kuda* mempunyai sistem penghadaman yang kurang berkesan.

Kedua-dua jantan dan betina *H.kuda* menunjukkan kadar tumbesaran yang sama dalam kedua-dua jenis makanan itu. Akan tetapi, tumbesaran keseluruhan mereka adalah kurang disebabkan *H.kuda* dewasa membesar dengan semakin perlahan apabila mereka menjadi semakin tua (Vincent & Sadler unpublished; cited in Vincent, 1996).

Dalam kajian ini, *H.kuda* menunjukkan FAE 30 % hingga 40%. Nilai-nilai FAE ini adalah lebih rendah daripada nilai-nilai FAE yang ditunjukkan oleh ikan laut yang lain. Ini disebabkan oleh *H.kuda* mempunyai sistem penghadaman yang kurang berkesan.

Nilai-nilai % PAE yang ditunjukkan oleh *H.kuda* adalah antara 40.5 % - 42.4%. Walau bagaimanapun, nilai-nilai PAE ini mungkin terlebih dijangka kerana kemungkinan kehilangan protein daripada sampel najis kuda laut ini dan juga tahap gangguan sampel najis ini.

Kuda laut yang diberi makanan udang saja menunjukkan kadar kematian yang lebih rendah daripada yang diberi makanan campuran. Ini adalah kerana, kuda laut yang dijangkiti penyakit semasa experiment kedua adalah disebabkan kualiti air yang buruk terutamanya semasa musim tengkujuh.