PROTEIN ISOLATION FROM CRICKET

(*Gryllus mitratus*)

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT

PROTEIN ISOLATION FROM CRICKET (*Gryllus mitratus*)

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The aim of this study is to isolate protein from cricket or *Gryllus mitratus*, determine the effect of pH to protein solubility and determine the amino acid composition of the isolate. Proximate analyses of cricket powder were done and resulted (54.09 ± 7.65)% crude protein, (5.35 ± 0.14)% ash, (24.93 ± 1.47)% fat and (9.00 ± 0.64)% other components. Cricket powder was extracted with two different solvents: water and sodium hydroxide at extraction temperature from 30 to 50^{0}C for 30, 60 and 90 minutes. Extraction using water at 30^{0}C for 30 minutes was chosen with 51.98 mg/ml protein content. The extracted protein was isolated using three precipitation methods (ammonium sulfate, isoelectric point and acetone precipitation). The result found that acetone precipitation gave the highest purity of protein content as much as 99.19% and the protein recovery up to 64.94%. Both essential and non-essential amino acid are composed in the isolate, where essential amino acid was lower compared to its non-essential amino acid. The solubility of the isolate was determined and showed the highest solubility at pH 8 and the isoelectric point at pH 5. In conclusion, acetone precipitation was able to isolate protein from cricket with high purity and recovery containing all of the essential amino acids.

Keywords: Isolation, Insects, Protein, Cricket, Precipitation, Amino acid, Solubility

DEDICATION

I dedicate this research to my beloved family.

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