

## **ISOLASI PROTEIN DARI PRODUK SAMPING PENGOLAHAN IKAN TENGGIRI DAN STUDI POTENSINYA SEBAGAI BAHAN FORTIFIKASI ASAM AMINO ESENSIAL BASA**

Nur Handayani Octaviyanti  
14/364466/PA/16029

### **INTISARI**

Penelitian dengan judul isolasi protein dari produk samping pengolahan ikan tenggiri dan studi potensinya sebagai bahan fortifikasi asam amino esensial basa telah berhasil dilakukan. Produk samping pengolahan ikan tenggiri yang berupa kepala, tulang, sirip dan ekordisiapkan menjadi sampel melalui proses pencucian, pengeringan, penghalusan, dan pengayakan. Sebelum isolasi dan fraksinasi protein, sampel dianalisis proksimat guna mengetahui kandungan protein.

Isolasi protein dilakukan pada sampel bebas lemak yang dilarutkan pada pH 12 dengan penambahan NaOH 2 M. Fraksinasi protein dilakukan dengan pengendapan pada pH 9 melalui penambahan HCl 2 M. Fraksi protein pI 9 dihidrolisis asam sehingga asam amino penyusunnya dapat dianalisis. Analisis asam amino menggunakan instrumen LC-MS dengan mode deteksi MRM. Potensi asam amino sebagai bahan fortifikasi pangan dikaji berdasarkan asam aminostandar FAO/WHO/UNU 1985 dan NRC 1993.

Protein produk samping pengolahan ikan tenggiri dapat diisolasi menggunakan ekstraksi basa dan menghasilkan rendemen sebesar 92,95%. Protein dapat difraksinasi pada pI 9 menghasilkan rendemen sebesar 11,71% dari protein terlarut. Fraksi protein pI 9 mengandung 30,81% asam amino total dengan 27,18% merupakan asam amino esensial. Komposisi asam amino esensial pada fraksi protein pI 9 antara lain arginin 5,91%, histidin 2,78%, lisin 5,61%, fenilalanin 2,16%, isoleusin 3,19%, leusin 4,08%, tirosin 0,06% dan valin 3,40%. Berdasarkan perhitungan skor kimia, fraksi protein pI 9 hasil ekstraksi basa berpotensi sebagai bahan fortifikasi pangan, khususnya asam amino esensial basa.

Kata kunci: asam amino esensial basa, ekstraksi basa, fraksinasi protein, produk samping ikan tenggiri, fortifikasi pangan

## **ISOLATION OF PROTEIN FROM SIDE PRODUCT OF NARROW-BARRED SPANISH MACKEREL PROCESSING AND STUDY OF ITS POTENCY AS BASE ESSENTIAL AMINO ACID FORTIFICANT**

Nur Handayani Octaviyanti

14/364466/PA/16029

### **ABSTRACT**

A research entitled isolation of protein from side product of narrow-barred spanish mackerel processing and study of its potency as base essential amino acid fortificant had been successfully carried out. The side product of narrow-barred spanish mackerel processing which include heads, bones, fins and tails were prepared to be sample in the process of washing, storing, refining and sifting. Before protein isolation and fractionation, sample was analyzed to determine the protein content.

Isolation of protein was carried out on fat-free sample dissolved at pH 12 with NaOH 2 M. Protein fractionation was carried out by precipitation at pH 9 through addition of HCl 2 M. The pI 9 protein fraction was hydrolyzed acid so its constituent amino acids could be analyzed. Amino acid analysis used LC-MS instruments with MRM detection mode. Potential amino acids as fortificant was assessed according to the amino acid standard FAO/WHO/UNU 1985 and NRC 1993.

The side product of narrow-barred spanish mackerel processing could be isolated using alkaline extraction and resulted 92.95% of yield. Protein could be fractionated in pI 9 with result 11.71% of yield. The fraction of pI 9 protein contained 30.81% of total amino acids with 27.18% was essential amino acids. Amino acid composition in the fraction of pI 9 protein included arginine 5.91%, histidine 2.78%, lysine 5.61%, phenylalanine 2.16%, isoleucine 3.19%, leucine 4.08%, tyrosine 0.06% and valine 3.40%. Based on the results of chemical calculations, the pI 9 protein fraction from base extraction potentially as a fortificant, especially base essential amino acids.

**Keywords:** base essential amino acids, alkaline extraction, protein fractionation, side product of narrow-barred spanish mackerel, food fortification