

FRAKSINASI PROTEIN EKSTRAK ASAM ASETAT PRODUK SAMPING IKAN TENGGIRI (*Scomberomorus commerson*) DENGAN KOLOM PENUKAR KATION SERTA STUDI POTENSI UNTUK FORTIFIKASI MAKANAN

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INTISARI

Telah dilakukan penelitian fraksinasi protein ekstrak asam asetat produk samping ikan tenggiri (*Scomberomorus commerson*) dengan kolom penukar kation serta studi potensi untuk fortifikasi makanan. Tujuan penelitian ini adalah mengetahui fraksi protein dari produk samping ikan tenggiri yang berpotensi sebagai fortifikasi makanan.

Isolasi protein dilakukan pH 3 dengan penambahan asam asetat glasial. Protein terlarut kemudian difraksinasi menggunakan kolom penukar kation dengan larutan pengelusi bufer sitrat untuk elusi pH 4 dan 5 serta bufer fosfat untuk elusi pH 6 sampai 9. Fraksi protein setiap pH elusi dianalisis menggunakan HPLC dengan detektor fluoresensi untuk mengetahui komposisi asam aminonya. Hasil analisis asam amino digunakan untuk studi fortifikasi berdasarkan standar FAO/WHO/UNU 1985 dan standar NRC 1993.

Hasil penelitian menunjukkan protein dapat diisolasi menggunakan asam asetat dengan rendemen 87,4%. Fraksi protein pH 4, pH 5, pH 6, pH 7, pH 8 dan pH 9 masing-masing mengandung asam amino esensial total sebanyak 21,9%, 17,6%, 25,0%, 31,3%, 27,2% dan 50,2%, Fraksi protein pH 9 yang memiliki potensi untuk fortifikasi makanan. Berdasarkan standar FAO/WHO/UNU 1985 fraksi pH 9 mempunyai nilai skor kimia untuk asam amino metionin 1,13, fenilalanin 6,64, treonin 1,02, dan lisin 1,25. Berdasarkan standar NRC 1993, skor kimia yang terdapat pada fraksi pH 9 untuk asam amino leusin 1,51, metionin 1,48, fenilalanin 7,60, treonin 1,09, dan lisin 1,34.

Kata kunci: asam amino esensial, fortifikasi, fraksinasi, kolom penukar kation, skor kimia.

PROTEIN FRACINATION OF ACETIC ACID EXTRACT BY MACKEREL FISH (*Scomberomorus commerson*) WITH CATION EXCHANGE COLUMN AND STUDY OF POTENTIAL FOR FOOD FORTIFICATION ISOLATION

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ABSTRACT

A research has been carried out on protein fractionation of acetic acid extract by mackerel fish (*Scomberomorus commerson*) with cation exchange column and study of potential for food fortification. The purpose of this study was to determine the protein fraction of mackerel by-products that have the potential as food fortification.

Protein isolation was carried out at pH 3 using glacial acetic acid. The dissolved protein was then fractionated using a cation exchange column with citrate buffer elution for the elution of pH 4 and 5 and phosphate buffer for the elution of pH 6 to 9. The protein fraction was analyzed using HPLC with a fluorescence detector to determine their amino acid composition. Amino acid analysis results were used for fortification studies based on the 1985 FAO/WHO/UNU standards and the 1993 NRC standards.

The results showed that protein could be isolated using acetic acid with a yield of 87,4%. The protein fractions of pH 4, pH 5, pH 6, pH 7, pH 8, and pH 9 elution contained total essential amino acids as much as 21,9%, 17,5%, 25,0%, 31,3%, 27,2% and 50,2%, respectively. The pH 9 protein fraction has a potential to be used for food fortification. Based on the 1985 FAO/WHO/UNU standard the chemical scores of the pH 9 fraction were 1,13 for methionine, 6,64 for phenylalanine, 1,02 for threonine, and 1,25 for lysine. Meanwhile, according to the 1993 NRC standard, the chemical scores contained in the pH 9 fraction were 1,51 for leucine, 1,48 for methionine, 7,60 for phenylalanine, 1,09 for threonine, and 1,34 for lysine.

Keywords: essential amino acids, fortification, fractionation, cation exchange column, chemical score.