

IDENTIFIKASI FRAKSI PROTEIN pI 5 DAN pI 8 HASIL EKSTRAKSI BASA BIJI PEPAYA (*Carica papaya L.*) DAN STUDI POTENSINYA SEBAGAI BAHAN FORTIFIKASI PANGAN

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INTISARI

Fraksinasi protein pI 5 dan 8 biji buah pepaya (*Carica papaya L.*) dan kajian potensinya sebagai bahan fortifikasi pangan telah dilakukan. Penelitian ini bertujuan menentukan kandungan gizi, melakukan ekstraksi protein pada suasana basa (pH 12), fraksinasi protein pada pI 5 dan 8, mengidentifikasi kandungan asam amino, serta studi potensinya sebagai bahan fortifikasi pangan.

Analisis kandungan gizi biji pepaya dilakukan dengan metode analisis proksimat. Analisis kadar air ditentukan dengan metode gravimetri, kadar abu dengan pengabuan pada suhu 550 °C, kadar lemak melalui ekstraksi Soxhlet, kadar protein kasar melalui metode Kjeldahl dan kadar karbohidrat melalui perhitungan *by different*. Sampel biji pepaya bebas lemak diekstraksi pada pH 12. Fraksinasi protein melalui pengendapan isoelektrik pada pI 5 dan 8. Asam amino dianalisis menggunakan KCKT fasa balik dengan detektor fluoresensi.

Biji pepaya mengandung air $12,03 \pm 0,06\%$; abu $8,36 \pm 0,04\%$; lemak $25,78 \pm 0,92\%$; protein $20,31 \pm 0,58\%$ dan karbohidrat $33,52 \pm 1,51\%$. Fraksi pI 5 dan 8 masing-masing sebesar 11,34% dan 37,56%. Total asam amino esensial pada fraksi protein pI 5 sebesar 9,66% dan fraksi pI 8 sebesar 3,53%. Oleh karena kadar asam amino esensial kurang dari 30% maka fraksi protein pI 5 dan 8 tidak berpotensi sebagai bahan fortifikasi pangan.

Kata kunci: Biji pepaya (*Carica papaya L.*), ekstraksi basa, pengendapan isoelektrik, fortifikasi

IDENTIFICATION OF PROTEIN pI 5 AND pI 8 FRACTION FROM ALKALINE EXTRACTION OF PAPAYA SEED (*Carica papaya L.*) AND ITS POTENTIAL STUDY AS FOOD FORTIFICATION MATERIAL

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ABSTRACT

Protein fractionation of pI 5 and 8 from papaya (*Carica papaya L.*) seeds and a study of food fortification material have been done. This research aims to determine the nutrient content of the seeds, extract the protein at alkaline condition (pH 12), fractionate using pI 5 and 8, identify amino acid content, and study as food fortificant.

The nutrition analysis of papaya seeds were carried out using proximate analysis. The water content was determined by gravimetric, ash content was determined by ashing the sample at 550 °C, fat content was determined by Soxhletation, protein content was determined by Kjeldahl method and carbohydrate was calculated using “by different” calculation. Protein was extracted from fat-free samples in alkaline condition at pH 12. Fractination of protein was carried out by isoelectric precipitation at pI 5 and 8. Amino acid was analyzed by reverse phase HPLC equipped with fluorescence detector.

The papaya seeds contain $12.03 \pm 0.06\%$ of water, $8.36 \pm 0.04\%$ of ash, $25.78 \pm 0.92\%$ of fat, $20.31 \pm 0.58\%$ protein and $33.52 \pm 1.51\%$ of carbohydrate. Fraction of pI 5 and 8 are recovered 11.34% and 37.56%. The essential amino acids content 9.66% in pI 5 and 3.53% in pI 8. Since the essential amino acid content is less than 30%, protein pI 5 and 8 fraction are not potential for food fortification.

Keywords : Papaya (*Carica papaya L.*) seeds, alkaline extraction, isoelectric precipitation, fortification