

**FRAKSINASI PROTEIN pI 5 DAN pI 8 BIJI CARICA (*Carica pubescens*)
DENGAN EKSTRAKSI BASA SERTA KAJIANNYA SEBAGAI BAHAN
FORTIFIKASI PANGAN**

MUHAMMAD SYARIF HIDAYATULLAH
11/317089/PA/14206

INTISARI

Telah dilakukan fraksinasi protein pI 5 dan pI 8 biji buah carica (*Carica pubescens*) serta kajian potensinya sebagai bahan fortifikasi. Penelitian ini bertujuan menentukan kandungan gizi, melakukan ekstraksi protein pada suasana basa (pH 12), fraksinasi protein pada pI 5 dan pI 8, serta mengidentifikasi kandungan asam amino esensialnya.

Penentuan kandungan gizi biji carica dilakukan melalui analisis proksimat. Kadar air ditentukan melalui metode gravimetri, kadar abu dengan pengabuan pada temperatur 550 °C, kadar lemak melalui ekstraksi padat-cair (Soxhletasi), kadar protein kasar melalui metode Kjeldhal, dan kadar karbohidrat melalui *by different*. Asam lemak yang terkandung dalam minyak biji carica dianalisis menggunakan KG-SM melalui derivatisasi BF₃-metanol. Sampel biji carica bebas lemak diekstraksi pada pH 12. Fraksinasi protein melalui pengendapan isoelektrik pada pI 5 dan pI 8. Asam amino dianalisis menggunakan KCKT fasa balik dengan detektor fluoresensi.

Biji carica (*Carica pubescens*) mengandung air 4,64 ± 0,15 %, abu 4,87 ± 0,07 %, lemak 35,38 ± 0,71 %, protein 28,28 ± 1,01 %, dan karbohidrat 26,83 %. Minyak biji carica mengandung asam oleat 71,08%, asam palmitat 15,62 %, asam linoleat 9,70 %, dan asam stearat 3,59 %. Fraksi pI 5_p dan pI 8 (pengendapan pertama) sebesar 87,41 % dan 9,01 %. Fraksi pI 5_s (pengendapan kedua supernatan sisa fraksi pI 8) sebesar 77,14 %. Total asam amino esensial pada fraksi protein pI 5_s sebesar 44,41 %, fraksi pI 5_p sebesar 35,44 %, dan fraksi pI 8 sebesar 0,63 %. Fraksi protein pI 5 berpotensi sebagai bahan fortifikasi. Fraksi pI 5_s memenuhi kebutuhan asam amino esensial sesuai ketentuan FAO/WHO tahun 1985 untuk usia dewasa dan anak-anak usia prasekolah sedangkan fraksi pI 5_p hanya memenuhi kebutuhan asam amino esensial untuk usia dewasa.

Kata kunci: Biji carica (*Carica pubescens*), asam lemak, ekstraksi basa, pengendapan isoelektrik, fortifikasi.

**FRACTIONATION OF PROTEIN pI 5 AND pI 8 FROM CARICA SEED
(*Carica pubescens*) BY ALKALINE EXTRACTION AND STUDY AS FOOD
FORTIFICATION MATERIAL**

MUHAMMAD SYARIF HIDAYATULLAH
11/317089/PA/14206

ABSTRACT

Fractination of proteins pI 5 and pI 8 of carica (*Carica pubescens*) seeds and study for food fortification have been done. This research aims to determine the nutrient content of the seeds, extract of the protein at alkaline pH, fractionate using pI 5 and pI 8, and identify the essential amino acid content.

The determination of nutrition content carica seed was done by proximate analysis. The water content was determined by gravimetric, ash content was determined by ashing sample at 550 °C, fat content was determined by Soxhletation, protein content was determined by Kjeldhal method and carbohydrates was calculated by different. Fatty acids contained in carica seeds oil was analyzed by using GC-MS through derivatization BF₃-methanol. Protein was extracted from fat-free samples in alkaline conditions at pH 12. Fractination of protein was carried out by isoelectric precipitation at pI 5 and pI 8. Amino acid was analyzed by using reverse phase HPLC with fluorescence detector.

The carica (*Carica pubescens*) seeds contain 4.64 ± 0.15 % of water, 4.87 ± 0.07 % of ash, 35.38 ± 0.71 % of fat, 28.28 ± 1.01 % of protein and 26.83 % of carbohydrates. Carica seeds oil contains 71.08 % of oleic acid, 15.62 % of palmitic acid, 9.70 % of linoleic acid and 3.59 % of stearic acid. Fraction pI 5_p and pI 8 (first precipitation) was recovered 9.01 % and 87.41 %. Fraction pI 5_s (second precipitation remaining of supernatant fraction pI 8) was recovered 77.14 %. The essential amino acids contain 44.41 % of fraction pI 5_s, 35.44 % of fraction pI 5_p, and 0.63 % of fraction pI 8. Fraction pI 5 is to be used potential as food fortification material. Fraction pI 5_s are fulfilling essential amino acids requirement in the regulation FAO/WHO 1985 for adult and child preschool while fraction pI 5_p only for adult.

Keywords: Carica (*Carica pubescens*) seeds, fatty acids, alkaline extraction, isoelectric precipitation, fortification