

## **ISOLASI PROTEIN pI 5 DAN pI 8 DARI EKSTRAK ASAM BIJI KARIKA (*Carica pubescens*) DAN POTENSINYA SEBAGAI FORTIFIKASI PROTEIN MAKANAN**

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### **INTISARI**

Telah dilakukan isolasi protein pI 5 dan pI 8 dari ekstrak asam biji karika (*Carica pubescens*) dan potensinya sebagai fortifikasi protein makanan. Tujuan penelitian ini untuk menentukan nilai gizi dari biji karika, mengetahui komposisi dan kadar asam amino esensial pada fraksi protein pI 5 dan pI 8, serta mempelajari potensi fraksi protein sebagai fortifikasi protein makanan.

Penelitian ini diawali dengan penentuan nilai gizi biji karika melalui metode analisis proksimat meliputi kadar protein, kadar lemak, kadar air, kadar abu dan kadar karbohidrat. Asam lemak biji karika dianalisis menggunakan GC-MS melalui derivatisasi BF<sub>3</sub>-metanol. Isolasi protein biji karika dilakukan pada pH 2 dan protein diambil kembali melalui pengendapan pada pI 5 dan pI 8. Komposisi asam amino dari protein kering beku dianalisis menggunakan HPLC derivatisasi OPA dan detektor fluoresen.

Hasil penelitian menunjukkan bahwa biji karika memiliki kadar air 8,30%, kadar abu 4,65%, kadar lemak 37,08%, kadar protein 24,77% dan kadar karbohidrat 25,20%. Fraksi protein pada pI 5 sebesar 5,06% dari protein total dengan komposisi asam amino esensial sebesar 27,12%, sedangkan pada pI 8 diperoleh fraksi protein sebesar 33,40% dari protein total dengan komposisi asam amino esensial sebesar 13,31%. Semua asam amino esensial pada fraksi protein pI 5 dan pI 8 memiliki skor kimia < 1. Nilai kadar asam amino esensial total < 30% dan skor kimia asam amino esensial <1 menjadikan fraksi protein pI 5 dan pI 8 tidak berpotensi dijadikan sebagai bahan fortifikasi makanan.

Kata kunci: Biji karika (*Carica pubescens*), asam amino, ekstraksi asam, pengendapan isoelektrik, fortifikasi makanan



**ISOLASI PROTEIN PADA pI 5 DAN pI 8 DARI EKSTRAK ASAM BIJI KARIKA (*Carica pubescens*) DAN POTENSINYA**

**SEBAGAI FORTIFIKASI PROTEIN MAKANAN**

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**ISOLATION OF PROTEIN AT pI AND pI 8 FROM THE ACID EXTRACT OF CARICA SEED (*Carica pubescens*) AND ITS POTENCY FOR PROTEIN FOOD FORTIFICATION**

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**ABSTRACT**

Isolation of protein at pI 5 and 8 from the acid extract of carica seed (*Carica pubescens*) and its potency for a protein food fortification has been done. The experiment was conducted to determine the nutritive value of carica seed, the composition, and the profile of essential amino acids in the protein fractions at pH 5 and pH 8, and to study the potential of the protein fractions as food fortification protein .

The experiment begins with determination of nutritional value of karika seed throught proximate analysis method such as protein, fat, moisture, ash, and carbohydrate content. Fatty acid of karika seed were analyzed by GC-MS with BF<sub>3</sub>-Methanol derivatisation. Isolation of karika seed protein performed at pH 2 and the protein precipitated at pI 5 and pI 8. The amino acid composition of the freeze-dried protein was analyzed using HPLC derivated OPA and fluoresense detector.

The results of proximate analysis shows that karika seed contains 8.30% moisture, 4.65% ash, 37.08% lipid, 24.77% protein and 25.20% carbohydrate. Protein fraction at pI 5 contains 5.06% protein from the total of protein with 27.12% essential amino acid and the protein fraction at pI 8 contains 5.06% protein from the total of protein with 33,40% essential amino acid. Neither protein fractions at pI 5 nor protein fractions at pI 8 of karika seed contain essential amino acid more than 30% and their chemical score < 1 so the acid extract of karika seeds can not be used as one of food fortification protein.

Keywords: karika seed (*Carica pubescens*), amino acids, acid extraction, isoelectric precipitation, food fortification