KAJIAN EKSTRAKSI DAN MODIFIKASI PATI DARI KARABENGUK (*Mucuna pruriens* L.)

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diajukan untuk memenuhi salah satu syarat memperoleh gelar Sarjana Sains
Program Studi Kimia

Oleh

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FAKULTAS PENDIDIKAN MATEMATIKA DAN ILMU PENGETAHUAN ALAM

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Sebuah skripsi yang diajukan untuk memenuhi salah satu syarat memperoleh gelar Sarjana Sains dalam bidang Kimia pada Fakultas Pendidikan Matematika dan Ilmu Pengetahuan Alam

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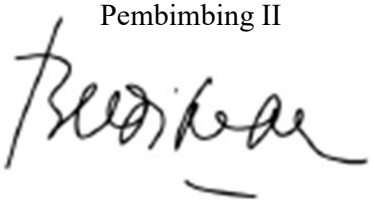

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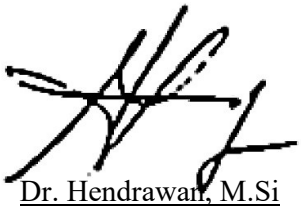

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ABSTRAK

Mucuna pruriens merupakan tanaman yang masih jarang digunakan namun memiliki potensi untuk dijadikan sumber pati baru. Hal tersebut berkaitan dengan sifat fisikokimia dan fungsional yang dimiliki pati dari *Mucuna pruriens*. Akan tetapi, pati *native* dari *Mucuna pruriens* memiliki beberapa keterbatasan sehingga dilakukan modifikasi pati. Penelitian ini bertujuan untuk melakukan kajian beberapa metode ekstraksi dan modifikasi pati, karakteristik fisikokimia (*moisture*, protein, lipid, abu, serat, ukuran dan morfologi) serta sifat fungsional (*swelling*, kelarutan, gelatinisasi dan pasta) pada pati *Mucuna pruriens*. Studi ini merupakan *literature review* dengan model *narrative* yang mengkaji dua metode ekstraksi dan tiga modifikasi pati *Mucuna pruriens* dari empat artikel terindeks scopus Q1 dan Q2 yang terbit pada 2002-2015. Hasil riset menunjukkan bahwa ekstraksi dan modifikasi pati dapat dilakukan dengan atau tanpa katalis dan larutan penetralan serta secara umum dilakukan pada suhu pengeringan 30-60°C selama 12-48 jam. Karakteristik fisikokimia pati *native Mucuna pruriens* mempunyai kandungan *moisture* 9,2-9,82%, protein 0,71-1,9%, lipid 0,4-2%, serat 7%, dan abu 0,28-5%, serta ukuran granula pati berkisar antara 12-45 μm dengan morfologi oval. Sementara itu karakteristik fisikokimia pati *Mucuna pruriens* hasil modifikasi mempunyai kandungan *moisture* 9,7-11,5%, protein 0-1,2%, lipid 0,57-1%, serat 1-3,4%, dan abu 1-0,58%, serta ukuran granula pati berkisar antara 12-31 μm dengan morfologi oval. Karakteristik fungsional pati *native Mucuna pruriens* terdiri dari *swelling* 13,3-16,6 g/g, kelarutan 14,3-16,2%, entalpi gelatinisasi 10,52 J/g, dan viskositas puncak pati berada pada rentang 256-320 BU. Sementara karakteristik fungsional pati *Mucuna pruriens* hasil modifikasi mempunyai *swelling* 6,7-15,6 g/g, kelarutan 7,7-53,6%, entalpi gelatinisasi 4,10-10,32 J/g, dan viskositas puncak pati berada pada rentang 120-410 BU. Berdasarkan sifat-sifat pati tersebut, *Mucuna pruriens* memiliki potensi sebagai alternatif sumber pati yang baru.

Kata kunci: pati, *Mucuna pruriens*, ekstraksi, modifikasi, fisikokimia

ABSTRACT

Mucuna pruriens is a plant that is rarely used but has the potential to be a new source of starch. This is related to the physicochemical and functional properties of starch from Mucuna pruriens. However, native starch from *Mucuna pruriens* has several limitations, so starch modification was carried out. This study aimed to study several methods of extracting and modifying starch, physicochemical characteristics (moisture, protein, lipid, ash, fiber, size and morphology) and functional properties (swelling, solubility, gelatinization and paste) of *Mucuna pruriens* starch. This study is a literature review with a narrative model that examines two extraction methods and three modifications of *Mucuna pruriens* starch from four Scopus indexed articles Q1 and Q2 published in 2002-2015. The results showed that starch extraction and modification can be carried out with or without a catalyst and neutralizing solution and is generally carried out at a drying temperature of 30-60°C for 12-48 hours. The physicochemical characteristics of native *Mucuna pruriens* starch have moisture content of 9.2-9.82%, protein 0.71-1.9%, lipid 0.4-2%, fiber 7%, and ash 0.28-5%, and starch granule size ranges from 12-45 μm with oval morphology. Meanwhile, the physicochemical characteristics of modified *Mucuna pruriens* starch have moisture content of 9.7-11.5%, protein 0-1.2%, lipid 0.57-1%, fiber 1-3.4%, and ash 1-0. ,58%, and the size of starch granules ranged from 12-31 μm with oval morphology. The functional characteristics of native *Mucuna pruriens* starch consisted of swelling 13.3-16.6 g/g, solubility 14.3-16.2%, gelatinization enthalpy 10.52 J/g, and peak viscosity of starch in the range of 256-320 BU. Meanwhile, the functional characteristics of modified *Mucuna pruriens* starch have swelling 6.7-15.6 g/g, solubility 7.7-53.6%, enthalpy of gelatinization 4.10-10.32 J/g, and peak viscosity of starch at range 120-410 BU. Based on these starch properties, *Mucuna pruriens* has potential as a new alternative source of starch.

Kata kunci: starch, *Mucuna pruriens*, extraction, modification, physicochemical

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DAFTAR GAMBAR

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