

EXTRACTION AND CHARACTERIZATION OF MUCILAGE FROM

Talinum paniculatum ('GINSENG JAWA')

By

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Research Report submitted in partial fulfillment of

The requirement for the degree of

Bachelor of Food Science (Food Technology)

DEPARTMENT OF FOOD SCIENCE

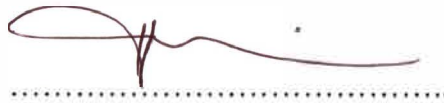
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ENDORSEMENT

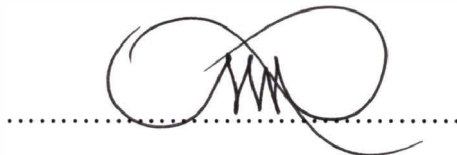
The project report entitled **Extraction and Characterization of mucilage from *Talinum paniculatum*** ('Ginseng Jawa') by **Zul Helmi Bin Anif**, Matric No. **UK 16807** has been reviewed and corrections have been made according to the recommendations by the examiners. This report is submitted to the Department of Food Science in partial fulfillment of the requirement of the degree of Bachelor of Food Science (Food Technology), Faculty of Agrotechnology and Food Science, Universiti Malaysia Terengganu.



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DECLARATION

I hereby declare that the work in this thesis is my own except
for quotations and summaries which have been duly
acknowledged.

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Thank you.

ABSTRACT

'Ginseng Jawa' (*Talinum paniculatum*) occurs locally naturalized and usually in cultivated land and roadside in tropical Africa and also can be found in Malaysia, where the shoots and leaves are added to stews and soups. Mucilage from 'Ginseng Jawa' is an interesting substance that can be used in food industry. Mucilage is water soluble polysaccharides found in widespread number of plants. Therefore, a study on extraction and characterization of mucilage from 'Ginseng Jawa' was undertaken. The mucilage was extracted by using hot water method at 70°C with sample ('Ginseng Jawa')/water ratio of 1:3 and mucilage precipitation was done with ethanol at 1:3 ratio. The total yield of mucilage, selected proximate composition, sugar content, pH and also physical characteristics of the mucilage were evaluated and compared with gum Arabic. The yield of mucilage from 'Ginseng Jawa' obtained was 0.85%. The protein, moisture and ash contents were 21.23, 14.97 and 18.41%, respectively. The sugar content, pH and color were comparable with the previous studies on mucilage from several other plants. For mineral content, the mucilage had higher amount of Potassium (62.23 mg/g) and low in Cuprum (0.057mg/g), in contrary to gum Arabic which the mineral contents were much lower. Emulsifying properties (emulsifying capacity and emulsifying stability) for mucilage was lower at low concentration (0.1 to 0.3%) but higher compared to gum Arabic. Viscosity of mucilage (0.3041Pa.s) was higher compared to gum Arabic (0.03398 Pa.s) where by result showed mucilage had pseudoplastic flow behavior whereas gum Arabic showed Newtonian flow behavior. Mucilage from 'Ginseng Jawa' has many properties like other gum and,thus, it have potential to be used in food and pharmaceutical industries since it is natural source which do not contribute to health problems.

ABSTRAK

Ginseng Jawa (*Talinum paniculatum*) tumbuh secara semulajadi di atas tanah yang diusahakan atau ditepi jalan di Afrika tropika dan juga boleh di dapati di Malaysia, di mana pucuk dan daunnya boleh ditambah ke dalam stew dan sup. Lendir dari 'Ginseng Jawa' ialah satu bahan yang boleh digunakan dalam industri makanan. Lendir ialah polisakarida larut air yang ditemui secara meluas dalam kebanyakan tumbuh-tumbuhan. Justeru itu, satu kajian mengenai pengekstrakan dan pencirian lendir dari Ginseng Jawa telah dijalankan. Lendir telah diekstrak dengan menggunakan kaedah air pada suhu tinggi pada 70°C, dengan nisbah sampel (Ginseng Jawa)/air ialah 1:3 dan lendir telah dimendakkan dengan etanol dalam nisbah 1:3. Jumlah hasil lendir, komposisi proksimat terpilih, kandungan gula, pH dan juga ciri-ciri fizikal lendir telah ditentukan dan dibandingkan dengan gam Arab. Hasil lendir dari Ginseng Jawa yang di perolehi ialah 0.85%. Kandungan protein, lembapan dan abu masing-masing ialah 21.23, 14.97 dan 18.41%. Kandungan gula, pH dan warna adalah hampir sama dengan kajian terdahulu untuk lendir daripada beberapa tumbuh-tumbuhan yang lain. Untuk kandungan mineral, lendir mempunyai kandungan Kalium yang tinggi iaitu 62.23mg/g dan rendah dalam Kuprum iaitu 0.057mg/g, berbeza dengan gam Arab yang mempunyai kandungan mineral yang rendah untuk semua mineral. Sifat-sifat pengemulsi (kapasiti mengemulsi dan kestabilan emulsi) untuk lendir adalah rendah pada kepekatan yang rendah (0.1-0.3%) tetapi lebih tinggi berbanding gam Arab. Kelikatan bagi lendir (0.3041 Pa.s) lebih tinggi berbanding gam Arab (0.03398 Pa.s) dan masing-masing menunjukkan sifat 'Pseudoplastic' dan 'Newtonian'. Lendir daripada Ginseng Jawa mempunyai ciri-ciri yang sama seperti gam yang lain, oleh itu, lendir ini mempunyai potensi untuk di gunakan di dalam industri makanan serta farmasi dan disebabkan lendir ini adalah sumber semulajadi ianya tidak akan memberi kesan terhadap kesihatan.