ANTIOXIDANT ACTIVITIES OF EXTRACTS FROM *Andrographis paniculata* (BURM.F.) NEES AS AFFECTED BY DIFFERENT EXTRACTION METHOD

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Antioxidant activities of mucilage from Talinum paniculatum ('Ginseng Jawa') as affected by different extraction method / Izlan Dhiyauddin Mohammed Rasni.

Lihat Sebelah

ANTIOXIDANT ACTIVITIES OF MUCILAGE FROM *Talinum paniculatum* ('GINSENG JAWA') AS AFFECTED BY DIFFERENT EXTRACTION METHOD

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By

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ENDORSEMENT

The project report entitled **Antioxidant Activities of Mucilage from 'Ginseng Jawa' (*Talinum paniculatum*) as affected by Different Extraction Methods** by **Izlan Dhiyauddin bin Mohammed Rasni**, Matric No. **UK 17143** has been reviewed and corrections have been made according to the recommendations by 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, University 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 acknowledge

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The name of Allah, Most Gracious, Most Merciful

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ABSTRACT

'Ginseng Jawa' (*Talinum paniculatum*) is an underutilized plant scattered throughout tropical Malaysia which is commonly can be found at every home as decoration purposes. The plant also can be taken as a supplementary food. 'Ginseng Jawa' is known to contain available amount of mucilage especially in young stems and leaves. This study was undertaken to determine yield and antioxidant activities of mucilage extracted from 'Ginseng Jawa'. There were three extraction methods performed in this study namely hot water extraction method, alkaline extraction method and acidic extraction method. Main chemicals used in those extractions were sodium hydroxide for alkaline extraction, acetic acid for acidic extraction and water for hot water extraction method. The result showed that alkaline extraction method provided the highest mucilage yield (1.99%) followed by hot water extraction (1.61%) and the lowest yield obtained from acidic extraction (1.00%). There was significant difference ($p < 0.05$) for yield of mucilage extracted using alkaline extraction method and acidic extraction method. The mucilage obtained from each extraction method was examined for antioxidant activities using 1,1-diphenyl-2-picrylhydrazyl (DPPH), P-anisidine, Ferric thiocyanate (FTC) and Thiobarbituric acid (TBA) methods. Result showed that mucilage from acidic extraction exhibited the highest percentage of DPPH scavenging activity (65.02%) followed by hot water, gum Arabic and base mucilage (55.11% - 26.64%). There were significant differences ($p < 0.05$) among mucilage extracted using all methods including gum Arabic. For FTC and TBA analyses, mucilage from alkaline extraction showed the highest percentage of linoleic acid oxidation inhibition (25.60% and 59.99% respectively) and also gives the lowest value in p-anisidine analysis (0.42). In conclusion, it was found that alkaline extraction was the most suitable method for 'Ginseng Jawa' mucilage extraction as well as provided the mucilage with good antioxidant properties.

ABSTRAK

'Ginseng Jawa' (*Talinum paniculatum*) adalah sejenis tumbuhan yang tidak digunakan sepenuhnya bertaburan seluruh Malaysia tropika yang biasanya boleh didapati di setiap rumah sebagai tujuan hiasan. Tumbuhan ini juga boleh diambil sebagai makanan tambahan. 'Ginseng Jawa' dikenali mengandungi amaun yang boleh didapati lendir terutamanya di batang dan daun muda. Kajian ini telah dijalankan untuk menentukan hasil dan aktiviti antioksidan lendir yang diekstrak daripada 'Ginseng Jawa'. Terdapat tiga kaedah pengekstrakan yang dilakukan dalam kajian ini kaedah pengekstrakan air panas, kaedah pengekstrakan beralkali dan kaedah pengekstrakan berasid. Bahan kimia utama yang digunakan dalam kaedah pengekstrakan ialah natrium hidroksida untuk pengekstrakan beralkali, asid asetik untuk pengekstrakan berasid dan air untuk kaedah pengekstrakan air panas. Hasilnya menunjukkan bahawa kaedah pengekstrakan beralkali memberikan hasil yang paling tinggi tertinggi (1.99%) diikuti oleh pengekstrakan air panas (1,61%) dan hasil terendah yang diperolehi dari perahan berasid (1.00%). Terdapat perbezaan yang signifikan ($p < 0.05$) untuk hasil lendir diekstrak menggunakan kaedah pengekstrakan beralkali dan kaedah pengekstrakan berasid. Lendir yang diperolehi daripada setiap kaedah pengekstrakan diperiksa untuk aktiviti antioksidan menggunakan 1,1-Diphenyl-2-picrylhydrazyl (DPPH), P-anisidine, thiocyanate Ferric (FTC) dan asid Thiobarbituric (TBA) kaedah. Keputusan menunjukkan bahawa lendir dari perahan berasid menunjukkan peratusan tertinggi aktiviti DPPH memerangkap (65,02%) diikuti dengan air panas, gam Arab dan lendir beralkali (55,11% - 26,64%). Terdapat perbezaan yang signifikan ($p < 0.05$) di kalangan lendir diekstrak menggunakan semua kaedah termasuk gam arab. Bagi analisis FTC dan TBA, lendir dari perahan beralkali menunjukkan peratusan tertinggi perencatan pengoksidaan asid linoleik (25,60% dan 59,99%) dan juga memberi nilai yang paling rendah dalam analisis p-anisidine (0.42). Kesimpulannya, ia telah mendapati bahawa pengekstrakan beralkali adalah kaedah yang paling sesuai untuk pengekstrakan lendir 'Ginseng Jawa' serta menyediakan lendir yang mempunyai sifat antioksidan yang baik