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Determination of blood glucose response and glycaemic index among healthy young adults after consuming taro (Colocassia esculenta) and tannia (Xanthosoma sagittifolium) / Hasmiza Halib.

Lihat Sebelah

DETERMINATION OF BLOOD GLUCOSE RESPONSE AND GLYCAEMIC INDEX AMONG HEALTHY YOUNG ADULTS AFTER CONSUMING TARO (Colocassia esculenta) AND TANNIA (Xanthosoma sagittifolium)

By

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DECLARATION

I hereby declare that the thesis is based on my original work except for quotations and citations which have been duly acknowledge. I also declare that it has not been previously or concurrently submitted for any degree at UMT or other institutions.

25th June 2007

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25th June 2007

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ABSTRACT

This randomized cross-over study was carried out to determine the blood glucose response and to determine the glycemic index value of tannia and taro. There are 12 healthy young adults aged between 21 to 23 years old comprising 6 male and 6 female participated in this study. Subjects were required to fast 10-12 hours and they were required to consume each test meals (tannia and taro) and glucose reference at different time within 15 minutes. Finger-prick capillary blood samples were taken at 0, 15, 30, 45, 90 and 120 min after consumption of the test meals. Area under the curve (iAUC) was calculated geometrically and the GI value was determined according to the standardized methodology. Mean aged and BMI of subjects are 21.25 ± 0.5 years and 21.5 ± 1.3 kg/m^2. This study shows the peak value of blood glucose response of tannia and glucose reference were at 30 minutes while taro at 45 minutes. This study shows that tannia had the lowest blood glucose response (1.8 ± 1.1 mmol/L) compared to taro (2.1 ± 1.0 mmol/L) and glucose reference (2.7 ± 0.5 mmol/L). This study also shows that peak blood glucose response for male subjects (2.3 ± 1.2 mmol/L) and glucose reference (2.7 ± 0.5 mmol/L) were at time interval 30 minutes while the peak blood glucose response for female subjects (2.3 ± 1.1 mmol/L) was at time interval 45 minute after taro being consumed while peak blood glucose response after tannia being consumed were (2.5 ± 0.8 mmol/L) for male, (1.1 ± 1.0 mmol/L) for female and (2.7 ± 0.5 mmol/L) for glucose reference with respective blood glucose response at 30 minute. This study showed that tannia could be categorized as having intermediate GI (59 ± 0.3) while taro considered as high GI food (7.8 ± 9.5) and glucose reference with GI (100 ± 0). There was a significant different between GI values of tannia and glucose reference ($p<0.05$) while there was no significant difference between between GI value of taro and glucose reference ($p>0.05$). This study also shows there was no significant correlation between amount of fiber, fat and water with GI value of both test meals. Therefore, this study may provide useful information for dietitian and nutritionist to determine whether tannia and taro suitable or not for the diet of diabetics.

PENENTUAN RESPONS GLUKOSA DARAH DAN GLISEMIK INDEKS DI KALANGAN DEWASA MUDA SIHAT SELEPAS MEMAKAN KELADI TELUR *(Xanthosoma sagittifolium)* DAN KELADI CINA *(Colocassia esculenta)*

ABSTRAK

Kajian rawak secara bersilang ini dijalankan bagi menentukan perubahan paras glukosa darah dan juga nilai indeks glisemik bagi Keladi telur dan Keladi cina. Seramai 12 orang dewasa muda yang sihat yang berumur 21-23 tahun yang terdiri dari 6 subjek perempuan dan 6 subjek lelaki terlibat dalam kajian ini. Subjek diminta berpuasa selama 10-12 jam dan subjek diminta memakan setiap makanan kajian (keladi telur dan keladi cina) serta glukosa rujukan secara berasingan dalam masa 15 minit. Sampel darah kapilari daripada cucukan jari diperoleh daripada subjek pada selang masa 0, 15, 30, 45, 90 dan 120 minit selepas subjek menghabiskan makanan kajian tersebut. Luas dibawah graf dikira secara geometri dan nilai indeks glisemik dikira berdasarkan metodologi yang standad. Didapati min bagi umur dan IJT subjek masing-masing adalah 21.25 ± 0.5 tahun dan 21.5 ± 1.3 kg/m^2. Kajian mendapati bahawa respon glukosa puncak bagi keladi telur dan glukosa rujukan adalah pada minit ke 30 manakala bagi keladi cina adalah pada minit ke 45. Hasil daripada kajian ini mendapati keladi telur mempunyai respon glukosa puncak yang paling rendah (1.8 ± 1.1 mmol/L) berbanding dengan keladi cina (2.1 ± 1.0 mmol/L) dan glukosa rujukan (2.7 ± 0.5 mmol/L). Kajian juga mendapati respon puncak bagi subjek lelaki (2.3 ± 1.2 mmol/L) dan glukosa rujukan (2.7 ± 0.5 mmol/L) adalah pada selang masa 30 minit manakala respon puncak bagi subjek perempuan (2.3 ± 1.1 mmol/L) adalah pada masa 45 minit selepas memakan keladi cina manakala respon puncak bagi subjek lelaki dan perempuan selepas memakan keladi telur adalah 2.5 ± 0.8 mmol/L bagi lelaki, 1.1 ± 1.0 mmol/L bagi perempuan dan 2.7 ± 0.5 mmol/L bagi glukosa rujukan iaitu masing-masing mempunyai respon puncak pada masa 30 minit. Hasil kajian juga mendapati keladi telur dikategorikan sebagai makanan yang mempunyai glisemik indeks sederhana (59 ± 0.3) manakala keladi cina pula dikategorikan sebagai makanan yang mempunyai nilai glisemik yang tinggi iaitu (78 ± 9.5) dan glukosa rujukan (100 ± 0). Didapati terdapat perbezaan yang signifikan antara nilai glisemik bagi keladi telur dan glukosa rujukan ($p<0.05$) manakala tiada perbezaan yang signifikan diantara keladi cina dan glukosa rujukan ($p>0.05$). Hasil kajian juga mendapati tiada korelasi yang signifikan diantara kandungan serat, lemak dan air dengan nilai GI bagi kedua-dua makanan kajian. Oleh itu, kajian ini memberi maklumat yang berguna kepada pakar dietetik dan pemakanan untuk menentukan sama ada keladi telur dan keladi cina sesuai atau tidak untuk pesakit diabetis.