

DETERMINATION OF BLOOD GLUCOSE
LEVELS AND CHOLESTEROL AMONG
INDONESIAN ADULT MALES CONSUMING
SWEETENED (*Citrus-Infused*) and BEANEE (*Arachis
oil-based*)

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Determination of blood glucose response and glycemic index
among healthy young adult after consuming chickpea (*Cicer
Arietinum*) and peanut (*Arachis Hypogaea*) / Yanty Sofia
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**DETERMINATION OF BLOOD GLUCOSE RESPONSE AND GLYCEMIC
INDEX AMONG HEALTHY YOUNG ADULT AFTER CONSUMING
CHICKPEA (*Cicer Arietinum*) and PEANUT (*Arachis Hypogaea*)**

By

YANTY SOFIA BT HASHIM

**Research project submitted in partial fulfillment of the requirements for
the Degree of Bachelor of Food Science
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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 acknowledged. I also declare that it has not been previously or concurrently submitted for any degree at UMT or other institutions.



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DETERMINATION OF BLOOD GLUCOSE RESPONSE AND GLYCEMIC INDEX AMONG HEALTHY YOUNG ADULT AFTER CONSUMING CHICKPEA (*Cicer Arietinum*) and PEANUT (*Arachis Hypogaea*)

ABSTRACT

This study was carried out to determine the blood glucose responses among 12 healthy young adults aged 21 to 25 years old, after consuming chickpea and peanut in different occasions. After 10 to 12 hours fasting, subjects were asked to eat each test meal and reference carbohydrate (glucose), at different time within 15 minutes. Finger prick capillary blood samples were taken at 0, 15, 30, 45, 90 and 120 minutes after eating the test meals. Mean age and BMI of subjects are 22.5 ± 0.9 year and 21.3 ± 1.7 kg/m². This study shows that peak value of blood glucose response and blood glucose level of all test meals and reference carbohydrate at 30 minutes. Mean blood glucose level for glucose is 5.69 ± 0.87 mmol/L, chickpea is 3.38 ± 0.26 mmol/l and peanut is 3.45 ± 0.19 mmol/l. The data shown there are significant difference ($p < 0.05$) between peak value of blood glucose level 'glucose and chickpea' and peak value of blood glucose level 'glucose and peanut', but there is insignificant difference ($p > 0.05$) between peak value of blood glucose level 'chickpea and peanut'. Mean blood glucose response for glucose is the highest which is 2.90 ± 0.84 mmol/l, followed by peanut (0.88 ± 0.39 mmol/l) and chickpea (1.05 ± 0.16 mmol/l). The data showed that there are significant differences ($p < 0.05$) between peak values of blood glucose response 'glucose and chickpea' and 'glucose and peanut'. However there is insignificant difference ($p > 0.05$) between peak values of blood glucose response 'chickpea and peanut'. This study shown that there are no significant difference between 'gender and peanut', 'gender and chickpea' and 'gender and glucose' ($p > 0.05$) along two hours period of this study. It also showed that AUC value for glucose is 193 ± 25.07 , chickpea is 77 ± 16.60 and peanut is 41 ± 5.19 . Analysis shows that there is significant deference ($p < 0.05$) between 'glucose and chickpea' and 'glucose and peanut'. However there is insignificant deference ($p > 0.05$) between chickpea and peanut. The glycemic index for chickpea is 30 and peanut is 21 while glycemic index for glucose is 100.

**PENENTUAN RESPONS GLUKOSA DARAH DAN INDEKS GLISEMIK
DIKALANGAN DEWASA MUDA SELEPAS MEMAKAN KACANG KUDA
(*Cicer Arietinum*) DAN KACANG TANAH (*Arachis Hypogaea*)**

ABSTRAK

Kajian ini dijalankan untuk menentukan perubahan paras glukosa darah dikalangan 12 orang dewasa muda yang sihat berumur 21 hingga 25 tahun selepas memakan kacang kuda dan kacang tanah. Selepas berpuasa selama 10-12 jam, subjek diminta memakan setiap jenis makanan ujian dan makanan rujukan (glukosa) secara berasingan dalam masa 15 minit. Sampel darah kapilari daripada cucukan jari diambil pada masa 0, 15, 30, 45, 90 dan 120 minit selepas subjek menghabiskan makanan ujian tersebut. Didapati min umur dan BMI subjek masing-masing 22.5 ± 0.9 tahun dan 21.3 ± 1.7 kg/m². Kajian ini menunjukkan kesemua makanan ujian mencapai puncak pada masa 30 minit. Min paras glukosa darah bagi glukosa 5.69 ± 0.87 mmol/L, kacang kuda 3.38 ± 0.26 mmol/l dan kacang tanah 3.45 ± 0.19 mmo/l. Terdapat perbezaan yang signifikan ($p < 0.05$) antara nilai paras glukosa puncak bagi 'glukosa dan kacang kuda' dan 'glukosa dan kacang tanah' tetapi tiada perbezaan yang signifikan antara nilai paras glukosa puncak bagi 'kacang kuda dan kacang tanah' ($p > 0.05$). Min respons glukosa darah bagi glukosa adalah paling tinggi iaitu 2.90 ± 0.84 mmol/l, diikuti kacang kuda (1.05 ± 0.16 mmol/l) dan kacang tanah (0.88 ± 0.39 mmol/l). Data menunjukkan terdapat perbezaan yang signifikan ($p < 0.05$) antara nilai respons glukosa puncak bagi 'glukosa dan kacang kuda' dan 'glukosa dan kacang tanah' tetapi tiada perbezaan yang signifikan antara nilai respons glukosa puncak bagi 'kacang kuda dan kacang tanah' ($p > 0.05$). Kajian menunjukkan tiada perbezaan yang signifikan ($p > 0.05$) antara jantina dengan nilai respons makanan ujian sepanjang tempoh 2 jam. Luas di bawah graf (AUC) menunjukkan nilai glukosa adalah sebanyak 193 ± 25.07 , kacang kuda sebanyak 77 ± 16.60 dan kacang tanah sebanyak 41 ± 5.19 . Hasil analisis menunjukkan terdapat perbezaan yang signifikan ($p < 0.05$) antara 'glukosa dan kacang kuda' dan 'glukosa dan kacang tanah' dan tiada perbezaan yang signifikan antara kacang kuda dan 'kacang tanah' ($p > 0.05$). GI untuk glukosa ialah 100, kacang kuda sebanyak 30 dan kacang tanah sebanyak 21.