

DETERMINATION OF GLYCEMIC RESPONSES OF PUMPKIN
Cucurbita maxima OMEGA IN HEALTHY ADULTS

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DETERMINATION OF GLYCEMIC RESPONSES OF PUMPKIN
(*Cucurbita maxima*) CAKE IN HEALTHY ADULTS

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PENGAKUAN DAN PENGESAHAN LAPORAN
PROJEK PENYELIDIKAN I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk:

*Determination of glycemic responses of pumpkin (Cucurbita
maxima) cake in healthy adults*

oleh *Nor Izatul Shima bt. Ramli*, No.Matrik *UK 11327*

telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini
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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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ABSTRACT

This study was conducted to determine the blood glucose responses and the glycemic index (GI) of control cake (CC) and pumpkin cake (PC). Fourteen subjects among students from University Malaysia Terengganu (UMT) with mean age (\pm standard deviation) of 21.79 ± 1.37 years and mean BMI of 21.52 ± 2.10 were tested the reference carbohydrate (glucose) and test meals which were CC and PC separately. After an overnight fasting, subjects were allowed to consume a food portion of cake containing 50g of available carbohydrate within 15 minutes. Capillary finger-prick blood samples were taken in fasting state (0 minute), 15, 30, 45, 60, 90 and 120 minutes respectively after consumption. This research showed the peak of blood glucose response of reference glucose and CC was at 30 minutes while the peak of blood glucose response of PC was at 45 minutes. Incremental area under the glucose responses curve (iAUC) were calculated for each cake and compared to determine the GI. T-test analysis was showed that there was no significant difference ($p > 0.05$) between CC and PC in every interval of times. PC was determined has lower GI value (75.75 ± 14.5) compared to CC (164.04 ± 36.82). Both of the cakes were considered as high GI foods (more 70) but GI value of PC was lower than that of CC. There was significant difference ($p < 0.05$) in the GI of these cakes. Independence t-test analysis was showed there was no significant difference ($p > 0.05$) of blood glucose response between genders in the same test meal. The GL of both cakes also was determined and from the result, GL value of CC is higher (82.02) than GL value of PC (37.88). In conclusion, by incorporating 30% pumpkin in cake formulation, the glycemic index of the cake could be reduced.

ABSTRAK

Satu kajian telah dijalankan untuk mengkaji paras glukosa darah dan indeks glisemik (GI) bagi kek kontrol (CC) dan kek labu (PC). Empat belas subjek yang terdiri daripada pelajar Universiti Malaysia Terengganu (UMT) yang mempunyai min umur (\pm sisihan piawai) adalah 21.79 ± 1.37 tahun dan min BMI adalah 21.52 ± 2.10 telah diuji dengan karbohidrat rujukan (glukosa) dan hidangan ujian iaitu CC dan PC secara berasingan. Selepas berpuasa semalaman, subjek dibenarkan makan satu porsi kek yang mengandungi 50g karbohidrat yang tersedia dalam jangka masa 15 minit. Sampel darah kapilari daripada cucukan jari semasa berpuasa (0 minit), 15, 30, 45, 60, 90 dan 120 minit diambil sejeurus selepas pengambilan makanan. Kajian ini telah menunjukkan bahawa puncak paras glukosa darah bagi glukos rujukan dan CC adalah pada minit ke-30 manakala puncak paras glukosa darah bagi PC adalah pada minit ke-45. Luas dibawah graf bagi paras glukosa darah (iAUC) telah dikira bagi setiap kek dan dibandingkan bagi menentukan GI kek tersebut. Analisis t-test menunjukkan bahawa tiada perbezaan yang signifikan ($p > 0.05$) antara CC dan PC bagi setiap selang masa. PC telah mencatatkan nilai GI yang lebih rendah (75.75 ± 14.5) berbanding dengan CC (164.04 ± 36.82). Kedua-dua kek telah dianggap sebagai makanan tinggi GI (lebih 70) tetapi nilai GI bagi PC lebih rendah dari nilai GI bagi CC. Terdapat perbezaan yang signifikan ($p < 0.05$) antara kedua-dua kek. Analisis t-test bebas telah menunjukkan tiada perbezaan yang signifikan ($p > 0.05$) bagi paras glukosa darah antara jantina dalam hidangan ujian yang sama. GL bagi kedua-dua kek telah ditentukan dan daripada keputusan yang diperolehi, nilai GL bagi CC lebih tinggi (82.02) dari nilai GL bagi PC (37.88). Kesimpulannya, dengan menggunakan labu dalam penyediaan kek, paras glukosa darah boleh dikurangkan. Seterusnya, ianya juga dapat merendahkan nilai GI makanan tersebut.