

DEPARTMENT OF AGRICULTURE AND
RURAL DEVELOPMENT
NATIONAL ACADEMY OF SCIENCES
AND ENGINEERING (NAS) (National Research Council)

INFORMATION REPORT

DEPARTMENT OF AGRICULTURE AND FOOD SCIENCE
UNIVERSITY OF CALIFORNIA, DAVIS
LANDRUM REPORT

2007

**DETERMINATION OF BLOOD GLUCOSE RESPONSE AND
GLYCEMIC INDEX AMONG YOUNG ADULT AFTER
CONSUMING CASSAVAS (*Manihot utilisima*) AND
COLEUS POTATOES (*Coleus Tuberosus*)**

By

IZYAN FARHANA BINTI MOHD ZAILAN

**RESEARCH PROJECT submitted in partial fulfillment of the
requirements for the Degree of Bachelor of Food Science (Food
Service and Nutrition)**

**FACULTY OF AGROTECHNOLOGY AND FOOD SCIENCE
UNIVERSITI MALAYSIA TERENGGANU
2007**

This project should be cited as :

Zailan, I. F. 2007. Determination of blood glucose response among young adult after consuming cassava (*Manihot utilisima*) and coleus potatoes (*Coleus Tuberosus*). Undergraduate thesis, Bachelor of Food Science (Food Service and Nutrition). Faculty of Agrotechnology and Food Science, Universiti Malaysia Terengganu.

No part of this report may be reproduced by any mechanical, photographic or electronic process or in the form of photographic recording, nor may it stored in a retrieval system, transmitted, or otherwise copied for public or private use, without written permission from the author and the supervisor(s) of the project.

LP
12
F&M
B
2007

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 Universiti Malaysia Terengganu or other institutions.



IZYAN FARHANA MOHD ZAILAN (UK10244)

Date : 27 JUNE 2007

Approved by

(SUPERVISOR: PUAN KHAIRIL SHAZMIN BT.KAMARUDIN)

Date :

ACKNOWLEDGEMENT

Syukur Alhamdulillah to the Almighty Allah S.W.T for giving me strength, patience and capability to complete this project and thesis write up.

First of all, I would like to express my deepest thanks and appreciation to my supervisor Puan Khairil Shazmin bt. Kamarudin, lecturer of Faculty Agrotechnology and Food Science, for her guidance, patience, advise and encouragement throughout the course of my study.

I would also like to express my thank to Science Officers of Food Science Department, Miss Nasranim and Puan Suzana, for their helped in borrowing equipments for my research. A lot of thank to all my subjects in this research, Azrim, Fayas, Faizal, Fikri, Fairul, Jabar, Lee Houng, Siew Ying, Sook Hui, Hanisah, Qhuzila and Laila, for their willingness and kindness to involve in my research. Without their collaboration and commitment, maybe I could not finish this research.

To all my friends especially to Shamimi, Fauziah, Halimatus, Hasmiza and Yanti for their helped and collaboration in finishing my research. Last but not least, to my parent, Mohd Zailan and Puan Roszita, thank for their encouragement, thrust and invocation for my successful in study in Universiti Malaysia Terengganu.

ABSTRACT

This randomized cross-over study was carried out to determine the blood glucose response among 12 healthy young adults with normal health in a health status inquiry, normal Body Mass Index (BMI: kg/m^2), between 18.5 to 24.9 and non smoking, aged between 20 to 25 years old, after consuming boiled cassavas and boiled coleus potatoes. In this study, subjects need to fast for 10 to 12 hours, and then were asked to eat each test meals and glucose as reference food, at different time within 15 minutes. Finger-prick capillary blood samples were taken at 0 minute, before consuming test meals and glucose, and then at time 15, 30, 45, 90 and 120 minutes after consuming test meals and glucose. This study showed that boiled coleus potatoes reached the highest peak blood glucose level (5.73 ± 1.03 mmol/L) at time 30 minutes, while for boiled cassavas and glucose the high peak mean blood glucose level at time 45 minutes. Similar with mean blood glucose response, boiled coleus potatoes reached the highest peak blood glucose response (2.35 ± 0.98 mmol/L) at time 30 minutes, followed by boiled cassavas 2.21 ± 1.33 mmol/L and the lowest ones was glucose 1.81 ± 1.06 mmol/L, both reached the high peak at times 45 minutes. Comparison after eating boiled cassavas and boiled coleus potatoes between gender showed that male did not differ significantly with female. Boiled cassavas and boiled coleus potatoes have very high glycemic index compare to glucose. Glycemic index for boiled cassavas was 103 while for boiled coleus potatoes was 111. To maintain good health, make sure that the quantity of this two meals are under control when consuming this two foods.

**PENENTUAN RESPONS GLUKOSA DARAH DAN INDEKS GLISEMIK DI
KALANGAN DEWASA MUDA SELEPAS MEMAKAN UBI KAYU (*Manihot
utilisima*) DAN UBI KEMBILI (*Coleus Tuberosus*)**

ABSTRAK

Kajian rawak secara bersilang ini dijalankan untuk menentukan respons glukosa darah di kalangan 12 orang dewasa muda yang mempunyai status kesihatan yang normal, Indeks Jisim Tubuh yang normal (IJT), dan tidak merokok, berumur antara 21 hingga 24 tahun, selepas memakan ubi kayu rebus dan ubi kembili rebus. Dalam kajian ini, subjek dikehendaki berpuasa selama 10 hingga 12 jam, kemudian diminta untuk memakan makanan kajian dan glukosa secara berasingan dalam masa 15 minit pada hari dan masa yang telah ditetapkan. Sampel darah kapilari daripada cucukan jari diambil pada masa 0 minit iaitu sebelum subjek memakan makanan kajian dan glukosa, dan kemudian pada masa 15, 30, 45, 90 dan 120 minit selepas subjek memakan makanan kajian dan glukosa. Hasil kutipan data dan analisis data didapati ubi kembili rebus mencapai respons puncak yang tertinggi pada masa 30 minit (5.73 ± 1.03 mmol/L), manakala bagi ubi kayu rebus respons puncak adalah pada masa 45 minit. Ubi kembili juga mempunyai respons glukosa yang paling tinggi (2.35 ± 0.98 mmol/L) berbanding ubi kayu (2.21 ± 1.33 mmol/L) dan glukosa (1.81 ± 1.06 mmol/L). Hasil kajian juga mendapati tiada perbezaan yang signifikan di antara jantung selepas memakan ubi kayu dan ubi kembili. Ubi kayu dan ubi kembili mempunyai paras indeks glisemik yang sangat tinggi lebih daripada paras indeks glisemik bagi glukosa. Indeks glisemik bagi ubi kayu rebus adalah 103 manakala bagi ubi kembili rebus adalah 111. Oleh itu, kedua-dua jenis makanan kajian ini perlu dikurangkan kuantiti pengambilannya dalam diet bagi mengekalkan kesihatan yang baik.