

Dietary Carbohydrates and the Glycaemic Index in Health and Disease

Class format: Lecture/seminar. Thursdays from 1pm to 3pm, FitzGerald Room 129.

Date	Topic	Reading	Assignments
Jan	14	Introduction	Ch 1
	21	Determining the GI of Foods – 1	Ch 2
	28	Determining the GI of Foods – 2	Ch 2
Feb	4	Hyperinsulinaemia and Insulin Sensitivity	Ch 3
	11	Determinants of Postprandial Insulin Responses	Ch 3
	18	Carbohydrates and Glycaemic Responses	Ch 4
	25	GI and Mixed Meals – 1	Ch 5
Mar	3	GI and Mixed Meals – 2	Ch 5
	10	Measuring Diet GI	Ch 6
	17	GI and Health	Ch 7
	24	GI and Diabetes / CHD	Ch 8
	31	GI and Cancer / Mechanisms	Ch 8
APR	7	CLASS CANCELLED (EB, San Diego)	
	14	GI vs GL	Ch 9
	21		Term Paper DUE

READING LIST

Required: TMS Wolever. *The Glycaemic Index: a physiological classification of dietary carbohydrate*. 2006, CABI, Wallingford, UK. (at bookstore for NFS1216HS01)

This book provides basic information about the glycaemic index students will be required to know, and provides the framework around which the course is based.

However, students will have to do other reading to enable them to complete the assignments and term paper. The text book contains a bibliography of over 800 references which can be used as a starting point to help students find the information they require. I will expect students to know and discuss details of pertinent literature cited in the book. For excellent marks, I will expect students to find and display knowledge about pertinent literature not cited in the text book.

Students will be provided with papers to read and evaluate for assignments, and they will be ones which are not discussed in the book. The term paper will cover issues about dietary carbohydrates in general; thus, glycaemic index is one of the issues involved, but there are others, and students will need to do other reading to provide good answers. Some key references will be provided.

Role of Assignments and Term Paper with respect to Course Objectives.

Assignment #1 - Calculating area under the curve (AUC):

Students will be given several sets of blood glucose response data representing blood glucose concentrations before and at various times after consumption of a test meal and asked to calculate various different types of AUC. Each student will get a unique set of data so that the student will not get the right answers by copy anyone else's answers.

This assignment will help students to become familiar with the different methods used to calculate the area under the curve (AUC) which is required to evaluate studies reporting acute glycemic responses and also bears on the more general question of how to analyze data which consists of serial measurements with time. A specific method of calculating AUC is used for glycaemic index, and this assignment will help students appreciate that the results of studies on glucose responses and their interpretation vary depending on how AUC is calculated.

The grading (7.5%) will be based on the accuracy of the AUC values calculated.

Assignment #2 – Calculation and statistical analysis of GI values:

Students will be given sets of AUC values for different test meals, and asked to perform several calculations including glycaemic index and a statistical analysis (repeated measures analysis of variance) comparing the different test meals. To prevent copying each other's answers, students will be given unique sets of data.

This assignment will help students become familiar with statistical principles and procedures which are relevant to the practice of expressing blood glucose responses as the glycaemic index, which will help them understand the reason why certain procedures are used in the methodology. This, in turn, will help them to improve their ability to critically evaluate literature in the area where methodology may be inaccurate or imprecise.

Grading (7.5%) based on getting the answers right and whether the brief written interpretation is reasonable (simply describe which means differ from which – as in the Results section of a paper).

Assignment #3 – Review of article on acute glycemic responses:

500-1000 Words (2 – 4 sides double spaced)

Students will be given a paper or manuscript (not discussed in the course book) dealing with acute blood glucose responses asked to critically review it.

This assignment will help students to consolidate and integrate the knowledge they have gained with respect to measuring the acute glycaemic responses elicited by foods. Ideally current papers will be chosen in which errors in methodology or data analysis have been made leading to inappropriate conclusions. From my experience, these are not hard to find – and a number of recent examples have already been selected for use in the course.

Grading (25%) based on how well the student has recognized the pertinent methodological issues and discussed their impact on the validity of the conclusions drawn by the authors of the paper.

Assignment #4 - Calculation of mixed meal relative glycaemic responses.

Students will calculate the relative difference in glycaemic response between sets of mixed meals; the answers should include a brief written description of the methods used along with a table showing the results of the calculations.

This assignment will help students to consolidate and integrate the knowledge they have gained with respect to predicting the glycaemic impact of mixed meals using the glycaemic index and the nutrient composition of the meals.

Grading (10%) based on the appropriateness of the written description of the methods used and the accuracy of the calculations.

Term Paper

1500-2500 Words (6 – 10 sides double spaced; figures and tables may be used)

Students will write an essay on a topic related to the role of dietary carbohydrates in health and disease. Topic can be selected from a list provided or selected by student, but should be approved by Dr. Wolever. Students will be expected to read and make reference to current literature which will include popular articles or other materials or scientific papers published in 2006-2007 not cited in the text book.

Grading (50%) based on whether the student has found and made reference to a representative selection of pertinent literature in the area, how well the student has identified and discussed the issues involved, and how well the student has formulated an opinion and logically defended it.

General Comment on Grading:

In addition to the points made above, according to SGS and University policies, grading of the assignments, term paper and final examination will include evaluation of the degree of original thinking displayed, organization, capacity to analyze and synthesize, sound critical evaluation, extent of knowledge base, English composition and quality of presentation.

Term Paper instructions

Select a topic approved by me, and write an essay of about 2000-2500 words in the form of a review article with an abstract of 250 words.

The essay must include papers or popular media published since 2006 (ie. not referred to in the text book) and on which TMS Wolever is not the principle author. You can review a specific paper, discuss recent papers with contrasting conclusions, or include current papers in a more general review. In discussing these works reference to previous material can be made – but the objective is for you to find and include current literature.

Suggested topics (for others, please obtain approval from Dr. Wolever):

Scientific validity of the way GI is presented in popular media.

Critique current nutrition educational tools related to GI / carbohydrates and glycemic response.

What is the role of whole grains OR dietary fiber OR GI/GL for reducing risk for diabetes and/or cardiovascular disease? (or some other condition)

Why do low CHO diets result in weight loss?

What is the role of GI / GL in weight management?

What is the role of GI/GL in health (ie. not disease prevention)?

Is sugar bad for you?

Is there any evidence that sugar alcohols are beneficial for health?

Does a high carbohydrate diet increase cardiovascular disease risk?

Nutrition recommendations for Canadians (1990) includes the recommendation that 55% of energy should be provided by dietary carbohydrates from a variety of sources. Discuss.