

Issue 87

In a nutshell

People who consume a diet with a lower glycaemic index appear to have better lipid profiles. Short term trials on diabetic subjects show that lowering the GI also improves diabetic control.

Although some nutritionists are already basing diabetic dietary recommendations around GI, there is a need for longer term dietary intervention studies.

Glycaemic index, diabetes & cholesterol

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NUTRITION RESEARCH REVIEW

What is glycaemic index?

A quick reminder for those who need it: glycaemic index is a measure of the effect of a food on blood glucose levels in the hours after it is eaten. A food with lower GI causes a slower, more gradual rise in blood glucose, compared to a food with higher GI.

Study one: GI, diabetes and cholesterol

There is a strong correlation between diabetic control, HDL-cholesterol and the GI of the foods eaten, according to an important new European study published this month.

Subjects: 2,810 patients with type I diabetes from the EURODIAB multi-centre study.

Method: Patients provided a 3 day dietary record. Blood was taken for measurement of cholesterol and glycosated haemoglobin (HbA₂ - a measure of long term diabetic control. Lower values mean better control)

Results: The subjects with the lower GI diets had lower HbA₂ values ($p < 0.0001$) and higher HDL-cholesterol ($p < 0.0001$). See Table.

Table: Glycaemic index of diet, HDL cholesterol and HbA₂ in diabetic subjects

Quartile	Mean GI	HbA ₂	HDL cholesterol
Lowest	74.9	6.04%	1.54 mmol/L
Highest	88.5	6.60%	1.44 mmol/L

Reference: Buyken AE et al. Glycemic index in the diet of European outpatients with type 1 diabetes: relations to glycosated hemoglobin and serum lipids. Am J Clin Nutr 2001;73:574-581

Comments

This study is one of several published recently which correlates GI with blood lipids, and in addition with diabetic control.

Another research study from America published this month showed a correlation in post-menopausal women between low GI and both higher HDL cholesterol ($p < 0.03$) and lower triglyceride values ($p < 0.001$)¹. A similar outcome regarding HDL cholesterol was reported in a third American study in February (the association was $p < 0.001$)².

The role of glycaemic index in managing a disease as serious as diabetes has been of great interest to researchers for more than 10 years. It has also been controversial.

The fact that foods can be classified by GI is not controversial. Nor is the fact that changing the GI of meals in research situations affects metabolism. For example lowering the GI lowers insulin resistance in diabetics.

The controversy is about what the clinical implications of all this are. For example in treating diabetes, preventing heart disease and in sports medicine.

In diabetes, some authorities already recommend patients to follow a diet emphasising lower GI foods. In sports medicine, high GI foods have been used as a source of quick energy to aid short duration sports performance and recovery, whilst low GI foods have been used in endurance sport. If lowering the GI of a diet can really improve HDL cholesterol levels, it would be of

major

importance in preventing heart disease, because it is hard to raise a patient's HDL cholesterol in a reliable, long term way.

However, some nutritionists are concerned that we are racing ahead of ourselves in making recommendations to change our patients' diets based on the GI. They feel the long term evidence that this will improve clinical patient outcomes (as distinct from biochemical measurements) is lacking.

There have been a number of clinical trials in which lowering GI in diabetic patients has been associated with moderate improvement in diabetic control over periods ranging from 2 weeks to several months. But what about several years?

Obviously it is a very demanding task to run those kind of long term dietary intervention studies. They are needed, but in the meanwhile good quality epidemiological studies involving large numbers of subjects can help. The EURODIAB study is one of these studies.

We hope that results such as these will encourage researchers to conduct longer, large scale intervention trials involving dietary change based on GI in diabetics, and perhaps also in people at high risk for heart disease.

References:

1. Liu S et al. Dietary glycemic load assessed by food-frequency questionnaire in relation to plasma high-density-lipoprotein cholesterol and fasting plasma triacylglycerols in postmenopausal women. *Am J Clin Nutr* 2001;73:560-566
2. Ford ES, Liu S. Glycemic index and serum high-density lipoprotein cholesterol concentration among us adults. *Arch Intern Med* 2001;161:572-576

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