

Nutritional Management of Blood Glucose Levels

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Background and Objectives:

Approximately 366 million have Type 2 Diabetes Mellitus (T2DM) and this is projected to reach 552 million in 2030. It is a leading cause of death in developed countries and epidemic in newly industrialised nations. There is now an urgent requirement to adopt a cost-effective prevention strategies efficient at a population level. As prevention of T2DM is more effective than treatment, nutritional management is a strategic target.



Based on the International Diabetes Federation 2011 report on the "Guideline for Management of Post-Meal Glucose in Diabetes" the ILSI Metabolic Syndrome and Obesity Task Force commissioned an expert group to explore the control of post-meal glucose by nutritional means. To implement a successful strategy an understanding of the effect of foods on the underlying metabolic derangements is essential.

Methods:

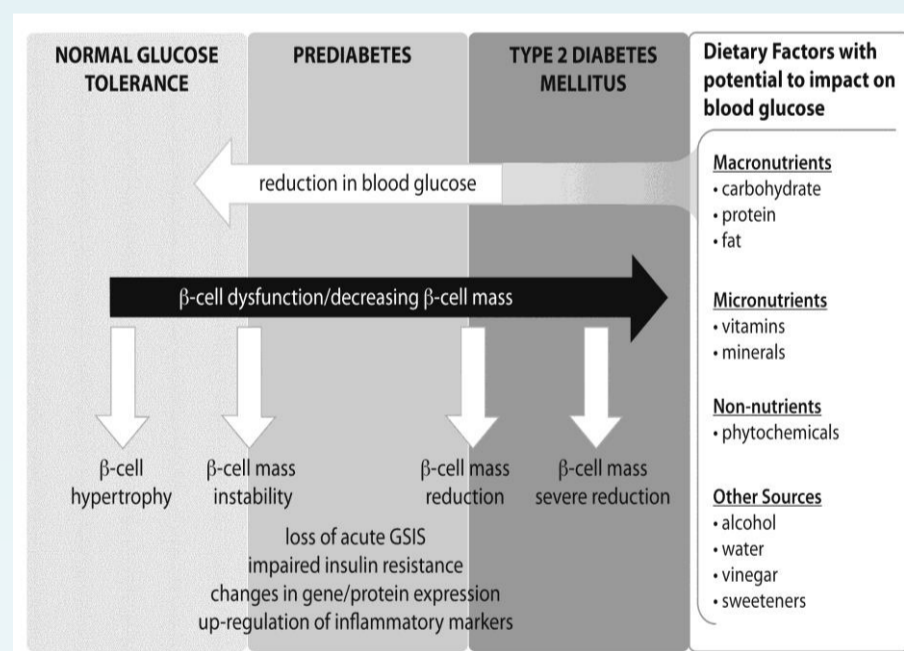
Using the highest quality data, a systematic and comprehensive review of the literature was undertaken. Included in the analysis were the major macronutrients; carbohydrate, protein and fat; micronutrient vitamins and minerals; non-nutrient phytochemicals and additional foods including low-calorie sweeteners, vinegar and alcohol.

Results:

The strongest corroboration of efficacy for improving glucose homeostasis was for insoluble and moderately fermentable cereal-based fibre and mono-unsaturated fatty acids as replacement of saturated fat.

Postprandial glycaemia was decreased by intake of viscous soluble fibre and the predominant mechanism of action was considered to be by delaying absorption of co-ingested carbohydrates.

There was weaker but substantial evidence that certain phytochemical-rich foods were likely to be effective. This may be associated with the suggestion that the gut microbiota plays an important role in metabolic regulation, which includes provision of phytochemical and other metabolites.



Potential for dietary factors to reduce blood glucose levels and impact on β-cell function and associated biomarkers

Conclusions:

Dietary components have significant and clinically relevant effects on blood glucose modulation. This suggests that employing a dietary regimen to attenuate the postprandial rise in blood glucose levels along with previously identified targets (reducing excess body weight and an increase in physical activity) will benefit the health of the population and limit the increasing worldwide incidence of T2DM.

Reference

Russell *et al* (2013) Impact of diet composition on blood glucose regulation. *Critical Reviews in Food Science and Nutrition* (In Press)

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