

Dietary strategies in the management of diabetes

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Diet is always said to be the 'cornerstone' of management of diabetes, yet the recommended dietary guidelines remain controversial and relatively few patients succeed in being well-controlled on diet alone. This implies that dietary treatment is not sufficient in itself or otherwise too difficult or even counterproductive. Many experts argue against the current dietary recommendations for diabetes, with both the quantity and quality of carbohydrate being at the centre of the controversy. This presentation is designed to critically address the issues of how much and what type of carbohydrate should be recommended for people with diabetes. It takes an evidence-based approach, giving greater weight to randomised controlled intervention studies.

Important questions that need to be addressed include: What is the scientific basis for recommending high carbohydrate diets? What are their potential adverse effects? What is the evidence for recommending diets high in monounsaturated fat (MUFA) instead? Are low glycaemic index (GI) diets superior to high MUFA diets? What is the optimal diet for improving insulin sensitivity? Is this different to the optimal diet for weight loss?

Prior to 1970 the prescribed diet for diabetes was low in carbohydrate (5–40% energy) because of its obvious role in raising blood glucose levels. But during the 1970s, a spate of studies showed that high carbohydrate-very high fibre diets (containing large amounts of legumes and wholegrains), compared to the high fat diets traditionally recommended, not only improved glycaemic control but also improved insulin sensitivity. As a result, most diabetes associations around the world began to recommend high-carbohydrate (>55% energy) diets that were low in saturated fat and 'high' in fibre for people with diabetes (American Diabetes Association (ADA), 1987; Diabetes and Nutrition Study Group of the European Association for the Study of Diabetes, 1988). Unfortunately, the high fibre criterion was seen as not critical to glycaemic control and the amounts recommended were only marginally higher than that generally consumed.

Not surprisingly, during the 1990s, studies began to appear showing that high carbohydrate diets containing only moderate amounts of fibre had adverse effects on blood triglyceride (TG), HDL-cholesterol and fasting glucose levels when compared with high-fat diets enriched with MUFA. Since people with diabetes are at high risk of cardiovascular disease, the findings were taken very seriously and in 1995 the ADA approved high MUFA as part of individualised dietary management. However, high MUFA diets have *not* been shown to reduce the most important measure of long-term diabetes control, ie glycated hemoglobin. Furthermore, high MUFA diets with more than 38% energy as fat have been found to be associated with insulin resistance. There is also concern that the energy dense nature of any high fat diet may predispose to weight gain.

Low GI diets for the management of diabetes have also been controversial. They are promoted on the basis that they allow a high carbohydrate intake with the least effect on postprandial blood glucose levels and without having to be exceptionally high in fibre. A recent meta-analysis comprising 14 studies in people with type 1 and type 2 diabetes (1) showed that low GI diets reduce glycated hemoglobin by 7.4%, a level comparable to many oral hypoglycaemic agents and superior to that of expensive insulin analogues. Low GI diets have been embraced in Australia and parts of Europe but not the United States where the concept is considered complex and another burden for people with diabetes.

The future is likely to see the percentage of carbohydrate in the diabetic diet 'individualised' to increase compliance and take account of usual food habits. Emphasis on changes in the *types* of carbohydrate foods and *types* of oils and margarines may be more important to overall diabetes control than the amount of carbohydrate vs fat *per se*.

Reference

1. Brand-Miller J, Colagiuri S, Hayne S, Petocz P. A meta-analysis of high vs low glycaemic index diets in diabetes. *Proc Nutr Soc Aust* 2002; 26: in press.