


**Fats for diabetics**

*See page 1528*

Type 2 diabetes results from the interaction between nature and nurture. A genetic predisposition is essential, but the disease flourishes only in environments where rich food is plentiful. The male or upper-body form of obesity is an especially strong predisposing factor and weight reduction is an effective form of treatment; unfortunately, few patients manage to keep their weight down.

Apart from calorie restriction, the composition of the diet for diabetics is controversial: advice to patients has alternated between low-carbohydrate and high-carbohydrate regimens.1 The emphasis currently is on high-carbohydrate, low-fat diets, the rationale being (a) that such diets are voluminous and filling without providing lots of calories; (b) the dietary fibre in carbohydrate-rich foods may flatten postprandial plasma glucose peaks; and (c) the low saturated fat content will reduce cholesterol concentrations and the risk of coronary disease.2 The need for a reduction in the intake of saturated fat in diabetics is widely accepted. However, the value of high-carbohydrate diets is not; Garg et al3 concluded that, by comparison with high-monounsaturated-fat diets, high-carbohydrate diets led to deterioration of glycaemic control and accentuation of hyperinsulinaemia, as well as to increased plasma triglyceride concentrations. None of these features is desirable.

Unsaturated fats may have a place in the diabetic diet as an alternative to carbohydrates, but which unsaturated fats? Peterson et al, as reported in this issue, approached this question by comparing European and Indian non-insulin-dependent diabetics. Indian Asians have a genetic propensity to diabetes that can be brought out by an affluent diet.4 This fact was already known in 1907, when Bose5 commented: “What gout is to the nobility of England, diabetes is to the aristocracy of India”. Peterson et al measured the fatty acid composition of erythrocyte membrane phospholipids and plasma triglycerides to assess the type of fat eaten by Indian type 2 diabetics living in England. Such biomarkers offer a reliable estimate of intake.6 Indian patients had higher concentrations of linoleic acid and other polyunsaturates of the n-6 series in their plasma and red cells, and lower concentrations of the monounsaturates oleic acid and of n-3 (omega-3) polyunsaturates than Europeans. These researchers suggest that the high proportion of n-6 polyunsaturates in the diet of Indians in England may lead to overproduction of thromboxane A2 and promote platelet aggregation and thrombosis. Moreover, low-density lipoprotein (LDL) particles rich in linoleic acid might be more easily oxidised and become part of atherosclerotic plaques. Peterson et al therefore favour increased consumption of oils high in monounsaturates, and of fish, as a source of very-long-chain n-3 fatty acids.

An increased intake of monounsaturates can be achieved by substituting olive oil or rapeseed oil for butter in cooking and seasoning; rapeseed oil is cheaper and provides the n-3 fatty acid alpha-linolenic acid as well. Margarines high in monounsaturates are also becoming available. Milk, cheese, and high-fat meat are rich in monounsaturates but also in saturates and cholesterol, and are unsuitable. n-3 fatty acids from fatty fish such as mackerel and salmon might indeed offer some protection against coronary disease,7 but use of fish oil in diabetics is controversial because it may raise plasma LDL and worsen glycaemic control.8 The suggestions of Peterson et al about the possible detrimental effects of n-6 polyunsaturates are provocative. However, the question of whether diabetic diets should be high in carbohydrates, mono-unsaturates, or n-6 or n-3 polyunsaturates remains unsolved and can be answered only by trials that include clinical endpoints such as retinopathy or nephropathy. Surprisingly, no diabetic diet has been tested in this way.

So where do we stand? What we know is that type 2 diabetics should lose weight. Also, they are at increased risk of coronary heart disease, and this risk is intensified by high intake of foods rich in saturated fats and cholesterol, including many of the “sugar-free” products that were once regarded as an essential part of diabetic diets. Patients should therefore use low-fat dairy products and meats, and avoid foods high in tropical oils or hydrogenated fats. This includes many bakery and deep-fat fried products, and most hard fats and shortenings; oils and soft margarines are suitable replacements. Amounts and types of carbohydrates and fats should be tailored individually,9 but such advice should be tempered by an awareness of how little we know about what constitutes the optimum diabetic diet.

**Martijn B Katan**

Department of Human Nutrition, Agricultural University, Wageningen, Netherlands

---


5 Bose RK. Diabetes in the tropics. BMJ 1907; ii: 1053–56.

