DIETARY COMPOSITION AND ITS ROLE IN THE TREATMENT OF TYPE 2 DIABETES

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Type 2 (non-insulin dependent) diabetes is generally associated with a degree of overweight and consequently an energy deficient diet will improve all aspects of diabetic control as well as facilitate weight loss. The dietetic management of the normal-weight type 2 diabetic is not so straightforward. Current recommendations include an increased consumption of complex carbohydrate (CHO) and dietary fibre and a reduced fat intake. This study was designed to investigate the relative importance of each of these recommendations on the following parameters of diabetic control: fasting blood glucose, lipoproteins and glucose tolerance. A series of four isocaloric "sugar free" diets was developed, each to be followed for a two week period. The subjects (6 type 2 diabetic men aged 50-69 years) were provided with suggested menus, recipes and frozen pre-cooked meals (Diets 1 and 4). The diets were analysed using the Nutritionist II software package from accurate weighed food records.

Diet	Complex CHO (% energy)	Dietary Fibre (g/day)	Fat (% energy)	Protein (% energy)
1	63	11.7	11	25
2	62	5.5	13	25
3	28	4.9	54	17
4	23	5.3	16	59

Diet 1 consisted predominently of unrefined cereals such as wholemeal bread, pasta etc., one or more meals/day of legumes, fruit, vegetables with usual serves of non-fat dairy products and very lean meat and fish. Diet 2 consisted of refined cereals such as white flour, low fat crackers, breakfast cereals, white bread, rice, pasta fruit juice and potato. Other fruits and vegetables, non-fat dairy products, lean meat and fish were similar to the first diet. The high fat content of Diet 3 was achieved by using full cream dairy products, eggs, fatty meats, butter, margarine and oil. Leafy vegetables were eaten in usual amounts but cereals and fruits were severely restricted. The low fat and low CHO content of Diet 4 necessitated a high protein intake Each subject ate a total of 1 kg/day of lean beef, pork, poultry or fish, as a large grilled steak (supplied) at breakfast, with large casseroles (supplied) at lunch and dinner. In addition to this they ate cold roast beef, steamed chicken and non-fat cottage cheese as snacks between meals. Skim milk and non-fat yoghurt were limited to a combined total of 500 ml/day. Bread and cereals were restricted to 100 g/day, non-starchy vegetables were eaten ad libitum but starchy vegetables and fruit were not allowed.

In agreement with other studies the first diet (high CHO, high fibre) resulted in improved metabolic control and reduction in fasting cholesterol and triglyceride concentrations. In contrast, these parameters did not change on the high CHO, low fibre Diet 2. Glucose tolerance deteriorated and plasma lipids rose on the high fat, CHO-restricted "portion" Diet 3. Perhaps unexpectedly, Diet 4 (low CHO, low fat) resulted in the greatest improvement in metabolic control and plasma lipid profile in those subjects who were able to maintain their pre-diet energy intake.

These results suggest that of the current dietary recommendations for Type 2 diabetes, both a reduction in fat intake and an increase in dietary fibre are important. An increased consumption of complex CHO did not appear to offer any advantage per se.

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