

Concurrent Session 3: Immune Function, Cancer, Type 2 Diabetes

The effect of high protein diets in the treatment of type 2 diabetes

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Background – Short term dietary studies suggest that high protein diets enhance weight loss and improve glycemic control in people with type 2 diabetes. However, the long term effects of these diets are unknown.

Objective – To determine if high protein (HP) diets are superior in the long term to conventional high carbohydrate (HC) diets in controlling diabetes and weight.

Design – Ninety nine subjects with type 2 diabetes (BMI 27-40 kg/m², aged 30-75 yrs, HbA1c 6.5-10%) were recruited for a 12 month, randomised dietary intervention trial. The experimental treatment was a HP diet (30% protein, 40% carbohydrate 30% fat) and the control situation was a HC diet (55% carbohydrate, 15% protein, 30% fat). Both diets recommended carbohydrates of low glycemic index and were restricted in energy (~6400 kJ) for the initial 3 months. Subjects attended regular visits (0, 3, 6, 9 and 12 months) for blood tests and weight measurements. Analyses were performed on an intention-to-treat basis, and study outcomes were compared using repeated measures ANOVA.

Outcomes – Body weight decreased significantly over time for both groups [-2.23 ± 0.52 (mean ± SEM) kg for HP group and -2.17 ± 0.63 kg for HC group at 12 months, *P*<0.001 for time], however there was no significant difference in the time course between groups (*P*=0.93, group × time effect). Both groups also showed similar improvements in HbA1c, serum triglycerides, total cholesterol and HDL cholesterol. Changes over time in serum creatinine and 24 hr urinary albumin excretion were not significantly different between groups.

Conclusions – These findings suggest that both diets may provide useful long-term strategies for weight reduction, and improvements in glycemic control and dyslipidemia. Consequently, energy restrictive, high protein diets may present a suitable alternative strategy for the dietary management of type 2 diabetes.

Effect of diacylglycerol on risk factors of type 2 diabetic patients

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Background – Diacylglycerol oil (DAG) has been shown to lower postprandial and fasting serum triacylglycerol levels and reduce body fat. We hypothesised that DAG will have a beneficial effect on type 2 diabetes mellitus (DM) patients.

Objective – To investigate the effect of DAG on risk factors of type 2 DM and cardiovascular disease in type 2 DM patients.

Design – This was a double-blinded controlled parallel study with 127 type 2 DM patients (aged 40 to 65) recruited in Hangzhou, China. All subjects consumed triacylglycerol oil (TAG) in the lead-in period (14 days), then they were randomly divided into two groups and consumed DAG or TAG with a similar fatty acid composition (25g/d) for 120 days. Blood samples were collected on day 0, 60 and 120 and risk factors of type 2 DM and cardiovascular disease and biochemical parameters were measured by standard methods.

Outcome – There were a total of 112 subjects who completed the study. Diet intake did not differ significantly between groups. Body weight, BMI, waist circumference, HOMA-IR, serum insulin and leptin levels were significantly reduced from baseline in the DAG group but not in the TAG group. Serum glucose was also significantly improved in patients with higher glucose levels at baseline (>7.00 mmol/L) in the DAG group. Parameters of liver and kidney functions and essential fatty acids in serum phospholipids did not differ between groups.

Conclusions – DAG consumption improved biomarkers and anthropometric parameters of type 2 DM compared with TAG consumption. DAG is safe for type 2 DM patients and has an equivalent bioavailability as TAG in relation to providing essential fatty acids.