

ICCN Poster Presentations

Novel foods in clinical practice

Dietary advice inclusive of walnut supplementation assures adequate intakes of n-3 polyunsaturated fats in the dietary management of type 2 diabetes mellitus

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Evidence-based nutrition principles for the treatment of type 2 diabetes mellitus recommend that <10% of energy should be derived from saturated fats (A level evidence) and that polyunsaturated fat (PUFA) intake should be ~10% of energy intake, with <30% total fat when weight loss is required.¹ Low fat intakes can be achieved with standard low fat dietary advice, but this does not guarantee the type of fats will be in the correct proportions.² The aim of this study was to compare the nutrient intakes resulting from general low fat dietary advice and low fat advice plus the integration of 30g walnuts per day under energy balance conditions. Thirty eight adults (14 females, 24 males) diagnosed with type 2 diabetes mellitus in the previous 2 years and not on insulin therapy were randomly allocated to either standard low fat dietary advice or low fat advice that then differentiated between food groups delivering different types of dietary fat and included 30g walnuts per day. Both groups were advised of the benefits of regular fish consumption. Separate dietitians with similar and long-term experience in diabetes management provided the advice for the two groups, and another two conducted diet history assessments and analysed the dietary data. Differences in fatty acid intakes were assessed and food sources of fatty acids were identified. Comparisons between groups were conducted using repeated measures analysis of variance. After 6 months, there was a significant treatment effect on the dietary polyunsaturated to saturated fat ratio between the control and intervention groups (0.6 vs 1.8, $p < 0.001$). The intake of α -linolenic (18:3n3) acid was substantially greater in the intervention group (3.6 ± 1.9 g/day vs 1.4 ± 0.2) and the n-6:n-3 ratio was more favourable and less variable (5.7 ± 1.4 vs 7.5 ± 3.6). By providing 50% of total n-3 PUFA intakes in the intervention group, walnuts played a significant role in producing a more favourable fatty acid intake in a low fat diet for the management of type 2 diabetes mellitus.

1. ADA Diabetes Care 2003;26:S31-S61.
2. Tapsell LC et al Aust Pacific Journal Clinical Nutrition (in press).

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Microclustered water and hydration

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In 2003 the Chinese Health Care Science and Technology Society organized an international cooperative research project on "Hydration and Health" to compare distilled water (DW) and a US patented microclustered water (MW), called "VIVO", which was awarded by US National Nutritional Foods Association as the "Best Nutritional Beverage in Year 2002". Recent bioelectrical impedance analysis (BIA) studies also showed that diabetics had a lower ratio of intracellular water (ICW) / extracellular water (ECW). A total 336 type-2 diabetics (plasma glucose level >7.0 mmol/L) from five hospitals were recruited in a randomized, double-blind trial. All the subjects received 250 ml of MW or DW twice daily for 4 weeks. To avoid over-dose absorption, subjects were advised to not take medications within 30 minutes after consumption of the test waters. BIA (RJL, USA) and other clinical markers were performed weekly. It was observed that MW consumption improved cell water distribution (ICW/ECW), basal metabolism rate (BMR), phase angle (PA) and cell capacitance (CP) during the 4 week testing period. In comparison with the rate change from baseline, the P value (MW vs DW) of ICW/ECW, BMR, PA and CP were 0.04, 0.003, 0.005 and 0.003, respectively. In this study, about 45% of subjects had higher plasma glucose levels (>8.3 mmol/L). In comparison with the means of above four BIA measurements at the end of experiment, the P value (MW vs DW) were 0.025, 0.022, 0.007 and 0.009, respectively. Two repeating NMR analysis showed that the half-width of the oxygen¹⁷ NMR spectrum were 64 and 67HZ, respectively, approximating normal saline, plasma and fresh natural spring water, while NMR values of DW and most purified waters exceeded 100 HZ. The relative small size of the water cluster may be one of the mechanisms which lead to improve cell structure and function.