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Erythrocyte biomarker-based validation of a diet history method used in a dietary intervention trial

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Background - Intervention trials provide the evidence for potential health benefits of dietary manipulations. The quality of the dietary data is critical for relating benefits to nutrient intakes. Although diet histories are often used to assess dietary intake in intervention trials, they have seldom been validated with objective measures.

Objective - To determine, in a dietary intervention trial, the validity of the diet history method using erythrocyte fatty acid composition as a gold standard indicator of fatty acid intakes.

Design - Overweight volunteers with mild cardiovascular risk factors and consuming less than one serve of fish per week were randomly assigned to either the intervention group (n=43) or the control group (n=48). Subjects were asked to choose at least eight serves per day from a selection of either omega-3 fatty acid enriched foods (~125 mg very long chain omega-3 (VLC n3) per serve) or matched control foods. Dietary intake was assessed using a diet history method and analysed using Foodworks (Australian Fatty Acids Rev 0.6 (Royal Melbourne Institute of Technology, 2002) with analytical data for the test foods added to the database. Erythrocyte fatty acid fractions were extracted from blood collected at baseline, three-months and six-months and was quantified by gas chromatography.

Outcomes - Dietary intakes of docosahexaenoic acid (22:6 n3), eicosapentaenoic acid (20:5 n3), VLC n3 and total n3 were related to levels of the same parameter seen in the erythrocyte membranes at three-months (Pearson's correlation; r=0.463, 0.418, 0.421, 0.341 respectively; P<0.001) and six-months (r=0.743, 0.663, 0.641, 0.515 respectively; P<0.05), but not at baseline.

Conclusions - The VLC n3 accumulated in erythrocytes after three-months of dietary supplementation reflect habitual dietary intakes assessed from diet histories. However, at customary lower rates of consumption (~200mg/day), they do not accurately reflect the n3 intakes of individuals.

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Food advertisements during children's and adult's viewing times: a comparative study

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Background - Current estimates of the prevalence of obesity in childhood in Australia are between 27-30%.¹ Television advertising of food to children is a contributing factor. Food advertisements on Australian television occur frequently and the majority of content is for foods high in saturated fat and sugar, most notably fast foods, chocolate and sugared cereals.²

Objective - To describe the quantity and content of food advertising on Australian television directed at children and adults as well as the marketing methods used in the promotion of food.

Design - Seventy five hours of television programming including advertisements from three commercial stations in Victoria were recorded. Content analysed included the types of products advertised, the representation of foods on adult's and children's television, and the marketing methods used.

Outcomes - Children's and adult's television advertisements occurred at a frequency of 20/h and 27/h respectively, while the frequency of food advertisements was identical for both audiences at 6/h. Adult's advertisements contained more core food products such as breads and cereals, fruit and vegetables, and dairy products. Children's television advertising of food used more cartoon (25.1%) and animated (13.7%) characters, a faster pace (3X), and the themes of magic, adventure and violence (50%) than adult's did.

Conclusions - There are differences between the types of food advertised on children's and adult's television. Results suggest the use of manipulative advertising directed at children. The foods predominately advertised to children do not support current dietary recommendations for optimum health or avoidance of overweight and obesity.

1. Vincent SD, Pangrazi RP. An examination of the activity patterns of elementary school children. *Ped Exerc Sci* 1996;14:432-441.
2. Zuppa JA, Morton H, Mehta KP. Television food advertising: counterproductive to children's health? A content analysis using the Australian Guide to Healthy Eating. *J Diet Assoc Aust*, 2003;60(2):78-84