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The effect of long chain omega 3 PUFA on resting and recovery heart rate in healthy adults

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The effect of long chain omega 3 PUFA on resting and recovery heart rate in healthy adults

Abstract

Abstract of a presentation.

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of dose).

Conclusions: These unexpected findings show that a large dose of *n*-3 LC-PUFA once per week is more effective in increasing whole body *n*-3 LC-PUFA content compared with a smaller dose delivered daily.

Funding source(s): The Molecular Medicine Strategic Research Centre, Deakin University.

SATURATED FAT ENHANCES INCORPORATION OF N-3 POLYUNSATURATED FATTY ACIDS INTO PLASMA AND ERYTHROCYTE LIPIDS IN HEALTHY HUMANS

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Background/Aims: High fat meals have been previously shown to promote bioavailability of *n*-3 polyunsaturated fatty acids (*n*-3PUFA). While the effect of dietary fat types on incorporation of *n*-3PUFA into blood and tissue lipids has been widely discussed in the literature, to-date this phenomenon has not been reported in humans.

Methods: This was a randomised, controlled, parallel, dietary intervention trial involving 25 healthy adults aged 18 to 65 years. Subjects consumed foods rich in either saturated (SFA) or *n*-6 polyunsaturated fatty acids (*n*-6PUFA), all supplemented with 2.4 g *n*-3PUFA daily for 6 weeks. Blood samples were collected after an overnight fast, at baseline and post-intervention, for analysis of plasma and red blood cell fatty acids.

Results: Linoleic acid increased significantly in plasma but not erythrocytes following the *n*-6PUFA diet, and did not change after the SFA diet. There was an increase in eicosapentaenoic acid (EPA) which was significantly higher (2 fold) after the SFA compared to the *n*-6PUFA diet. There was also a greater increase in docosahexaenoic acid (DHA) after the SFA diet, although this was not significantly different to the *n*-6PUFA diet. Conversely there was a significant reduction in plasma docosapentaenoic acid (DPA) which was 2 fold greater following the *n*-6PUFA compared to the SFA diet.

Conclusions: Dietary background fat type affects *n*-3PUFA incorporation into plasma and erythrocytes in healthy subjects. Dietary SFA facilitate *n*-3PUFA incorporation into plasma and erythrocytes compared to dietary *n*-6PUFA.

Funding source(s): Hunter Medical Research Institute (HMRI) and Coordenação Nacional de Desenvolvimento Científico e Tecnológico (CNPq, Brazil).

THE EFFECT OF LONG CHAIN OMEGA 3 PUFA ON RESTING AND RECOVERY HEART RATE IN HEALTHY ADULTS

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Background/Aims: An elevated heart rate at rest and slower recovery following exercise are indicators of cardiovascular disease (CVD) mortality and death. Research suggests consumption of long chain omega-3 polyunsaturated fatty acids (LCn-3PUFA) have an anti-arrhythmic effect on the heart and reduce heart rate in those with cardiovascular dysfunction. This systematic literature review aimed to investigate the current evidence regarding the effects of LCn-3PUFA on resting and recovery heart rate in adults free from CVD.

Methods: A systematic search of the databases Scopus, Web of Science and the Cochrane Library was conducted (January 2005 to May 2015). Inclusion criteria were: randomised controlled trials investigating the effect of LCn-3PUFA consumption on resting and/or recovery heart rate in healthy adults without pre-existing CVD. Studies were assessed for quality using the American Dietetic Association Quality Criteria Checklist.

Results: Of the eight articles identified in this review, only two showed a heart rate lowering effect of LCn-3PUFA consumption. These two studies

involved participants with elevated resting heart rates or risk factors for CVD. Recovery heart rate was assessed in only one study, which found a reduction following LCn-3PUFA consumption.

Conclusions: Whilst a lack of an effect of LCn-3PUFA on resting heart rate was found in most studies, supplementation with LCn-3PUFA appeared to be effective in individuals with elevated resting heart rates. Further studies are needed to determine these effects on heart rate recovery in healthy adults.

Funding source(s): N/A.

N-6 POLYUNSATURATED FATTY ACID INTAKE AND RISK OF MORTALITY IN THE AUSDIAB COHORT

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Background/Aims: Analysis of the Sydney Heart Study reported an adverse effect of dietary *n*-6 polyunsaturated fatty acids (PUFA) on mortality, and recent meta-analyses have reached contrasting conclusions regarding the effect of dietary *n*-6 polyunsaturated fatty acids (PUFA) on cardiovascular mortality. The aim of this study was to examine the effect of *n*-6 PUFA on mortality in the Australian Diabetes, Obesity and Lifestyle Study (AusDiab) cohort, a large Australian prospective study of cardio-metabolic health.

Methods: The relationship between dietary PUFA intake and all-cause or CVD mortality in the AusDiab cohort, a population of 11,247 Australians aged ≥ 25 y recruited in 1999/2000 and followed until 2012, was examined using Cox regression. Comorbidities, demographic, and lifestyle information was collected by questionnaire, and fasting blood tests undertaken. Baseline dietary intake was assessed by a 121-item food frequency questionnaire. Vital status and causes of death were collected by linkage to death registries.

Results: Adjusted for age and sex, those in the highest quintile of *n*-6 PUFA intake had lower risk of total and cardiovascular mortality (all-cause mortality HR: 0.82, 95% CI: 0.69–0.99, $p < 0.05$), but this failed to retain significance after further adjustment for previous cardiovascular disease, education, exercise, diabetes, dietary energy and smoking.

Conclusions: These findings from a contemporary Australian cohort suggest that *n*-6 PUFA have neutral or possibly beneficial effects on all-cause and cardiovascular mortality.

Funding source(s): None to declare for these analyses. However AusDiab has been funded by NHMRC, as well as support from State governments, academic and industry bodies.

CONCURRENT SESSION 3: CARBOHYDRATES.

THE EFFECT OF IMPROVING DIETARY QUALITY ON MEASURES OF VASCULAR STRUCTURE AND FUNCTION IN A POPULATION WITH DIABETES

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Background/Aims: People with diabetes have a heightened risk of cardiovascular disease compared with the general population. The aim was to determine if increasing fruit (+1 serving), vegetable (+2 servings) and dairy (+1 serving) intake slows 12 month common carotid artery intima media thickness (CCA-IMT) progression, compared to a control group continuing on their usual diet, in people with type 1 and type 2 diabetes. Secondary outcome measures were peripheral and central blood pressure, augmentation index (AI) and pulse wave velocity (PWV).

Methods: A 12 month randomised controlled trial was conducted. The primary outcome was mean CCA-IMT, measured at baseline and 12 months using B mode ultrasound. Secondary outcomes were peripheral and central blood pressure, AI and PWV, measured at baseline, 3, 6, 9 and 12 months. Participants in the intervention group received dietary