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Associations between baseline erythrocyte n-3 polyunsaturated fatty acids and weight indices in volunteers for a weight loss dietary intervention

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Associations between baseline erythrocyte n-3 polyunsaturated fatty acids and weight indices in volunteers for a weight loss dietary intervention

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Background: Research indicates that different types and amounts of dietary fat influence the accumulation or possible reduction of excess body fat. In particular n-3 PUFA may affect weight status and abdominal obesity in humans. We are conducting a 12 month dietary intervention trial to test this effect [ACTRN12608000425392].

Objective: The aim of this study was to identify any associations between erythrocyte n-3 PUFA composition and weight status in overweight and obese volunteers at baseline of the trial.

Design: Volunteers for the trial were recruited by advertising in the Wollongong community. Data from fasting blood samples, and anthropometric (weight, height, waist, hip) and percent body fat measures were available for 51 overweight (BMI 25-29.9kg/m²), 43 obese (BMI 30-34.9) and 23 more obese (BMI >35kg) subjects. Erythrocyte fatty acids were determined using standard laboratory procedures in a quality assured pathology laboratory (Analytical Reference Laboratories (ARL) Pathology, Melbourne). After examination of the data, associations between erythrocyte n-3 PUFA (% total fatty acids) and weight indices across the study sample and within BMI group were examined using Spearman’s correlation co-efficient.

Outcomes: For each group, the mean age was 45±8; 44±8 and 46±6yr; mean waist was 96.9±6.1; 109.1±8.4; 118.2±13.7cm, and mean fat mass was 34.3±6.6; 36.4±8.0 and 43.4±6.1% respectively. For the whole sample, there were no associations between n-3 PUFA status and any of the weight indices. In the overweight group, a significant (P=0.05) negative relationship was found between hip measurements and total n-3 PUFA (r = 0.340) and 22:6n3DHA (r = -0.333), and in the more obese group a significant positive relationship was found between BMI and 22:6n3DHA (r=0.453).

Conclusion: There was no association between erythrocyte n-3 PUFA and weight indices in this sample of study volunteers. Within group relationships may reflect differences in dietary intake which will be further explored.

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