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The n-3 polyunsaturated fatty acid status in the Hangzhou region
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Background – Increased dietary intake of n-3 polyunsaturated fatty acid (PUFA) raises n-3 PUFA levels in tissues, and is associated with beneficial effects on the prevention of cardiovascular diseases and inflammation, and perhaps with neuropsychiatric disorders.

Objective – To investigate the n-3 PUFA status in the Hangzhou region in China by determination of the serum phospholipid (PL) fatty acid composition, as a biomarker of status.

Design – Cross-sectional study of 154 free-living subjects (108 males and 46 females) recruited from Hangzhou, China. Each subject gave a fasting blood sample, serum phospholipid was separated by thin liquid chromatography. Fatty acid methyl esters were prepared by standard methods, and separated by gas liquid chromatography.

Outcomes – The ages were 55.9 ± 13.7 and 55.6 ± 10.1 yrs, and BMI were 23.9 ± 3.1 and 22.6 ± 3.1 kg/m² for males and females, respectively. Table shows the serum PL composition of total and individual n-3 PUFA for both genders (as percent of PL fatty acids).

<table>
<thead>
<tr>
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<th>Male (n=108)</th>
<th>Female (n=46)</th>
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<tbody>
<tr>
<td>18:3n-3</td>
<td>0.7 ± 0.2</td>
<td>0.8 ± 0.3</td>
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<tr>
<td>20:5n-3</td>
<td>2.1 ± 0.8</td>
<td>2.2 ± 1.0</td>
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<tr>
<td>22:5n-3</td>
<td>0.6 ± 0.3</td>
<td>0.5 ± 0.3</td>
</tr>
<tr>
<td>22:6n-3</td>
<td>5.3 ± 2.0</td>
<td>5.7 ± 2.2</td>
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<tr>
<td>Total n-3 PUFA</td>
<td>8.6 ± 2.0</td>
<td>9.2 ± 2.0</td>
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Conclusions – Compared with our previous study from Australian populations, where the total n-3 PUFA was found to be 5.9% of PL fatty acids¹, the higher proportion of 20:5n-3, 22:6n-3 and total n-3 PUFA in serum PL reported here may contribute to the lower coronary heart disease incidence in the Hangzhou population.


Effects of exposure to grape-seed polyphenols and vitamin C on lipid peroxidation in vivo
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Introduction - Oxidative stress has been implicated in a number of disease processes. There is evidence suggesting that vitamin C, a major water-soluble antioxidant, may reduce oxidative stress. The effects of dietary polyphenols, water-soluble compounds with potent antioxidant activity in vitro, on oxidative stress are unclear.

Objectives - The objectives of this study were to investigate the effect of supplementation with grape-seed polyphenols on oxidative stress, and to compare any effects to those of vitamin C.

Design- Following a 3-week washout, participants were randomised to receive (i) 500mg/day vitamin C + matched placebo (n = 19), (ii) 1000mg/day polyphenols + matched placebo (n = 16), (iii) 500mg/day vitamin C + 1000mg/day polyphenols (n = 16), or (iv) matched placebos (n = 18). Plasma and urinary F₂-isoprostanes and oxidised low-density lipoproteins were analysed as markers of oxidative damage.

Outcomes - Supplementation with grape-seed polyphenols resulted in a significant increase in urinary excretion of specific phenolic acids (3-hydroxyphenylpropionic acid), but did not alter F₂-isoprostane concentrations or oxidised low-density lipoproteins. The phenolic acid metabolites, markers of exposure to grape-seed polyphenols, were not related to changes in markers of oxidative stress. Plasma vitamin C levels increased significantly following supplementation. Plasma F₂-isoprostane concentrations fell following supplementation with vitamin C (p=0.056). There was no change in urinary F₂-isoprostane concentrations or oxidised low-density lipoproteins. There was no relationship between increases in plasma vitamin C and changes in markers of oxidative stress.

Conclusions - These results support the suggestion that supplementation with vitamin C may reduce in vivo lipid peroxidation. However, supplementation with grape-seed polyphenols and exposure to phenolic acid metabolites had no effect on in vivo lipid peroxidation.