Phenolic substances found in red wine variety.

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Of claret and coronaries

Despite enjoying a cuisine rich in saturated fats, the French escape the high incidence of coronary artery disease to which their neighbours across the Channel are subject. The reason for this protection has been attributed, in part, to the moderate and regular consumption of wine—specifically red wine.

Frankel et al investigated the hypothesis that the antioxidant properties of the complex phenolic substances found in red wine (flavonols, catechins, anthocyanins, and soluble tannins) may protect low density lipoprotein (LDL) from peroxidation to an atherogenic form. They isolated wine phenolics from a Californian red of the Petite Sirrah grape variety. (Why French wine was not used is not explained—perhaps they preferred to drink it?) They showed that 1000 fold dilutions of red wine phenolics were effective in inhibiting the copper catalysed oxidation of LDL.

This in vitro observation cannot be extrapolated to explain the rates of coronary artery disease in France. Copper catalysed oxidation of LDL does not occur in vivo, and little is known of the absorption and pharmacokinetics of these phenolic compounds, or of the biological effects of LDL exposed to red wine derivatives. So we are left to mull over the effects the next glass of red wine may be having on our coronary arteries. Sante!

S A THORNE

Inhibition of oxidation of human low-density lipoprotein by phenolic substances in red wine

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Abstract

The “French paradox” (apparent compatibility of a high fat diet with a low incidence of coronary atherosclerosis) has been attributed to the regular drinking of red wine. However, the alcohol content of wine may not be the sole explanation for this protection. Red wine also contains phenolic compounds, and the antioxidant properties of these may have an important role.

In vitro studies with phenolic substances in red wine and normal human low-density lipoprotein (LDL) we found that red wine inhibits the copper-catalysed oxidation of LDL. Wine diluted 1000-fold containing 10% of total phenolics inhibited LDL oxidation significantly more than α-tocopherol.

Our findings show that the non-alcoholic components of red wine have potent antioxidant properties toward oxidation of human LDL. (Lancet 1993;341:454-7.)