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FILE: ■ Red Wine
■ Antioxidant Status
■ Coronary Heart Disease

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RE: Effects of Red Wine Consumption on Risk Factors for Coronary Heart Disease

Tsang C, Higgins S, Duthie GG, et al. The influence of moderate red wine consumption on antioxidant status and indices of oxidative stress associated with CHD in healthy volunteers. *Br J Nutr.* 2005;93:233–240.

Epidemiologic evidence indicates that moderate red wine consumption may protect against coronary heart disease, an association known as the "French paradox." The paradox is the observed low mortality rates found in certain French populations despite their "high serum cholesterol concentrations, high systolic blood pressures, high dietary fat intakes, and low consumption of fruit and vegetables." The beneficial effects of the paradox are ascribed to the consumption of red wine in these populations and are thought to be due to the constituent phenolic compounds found in the wine. Evidence indicates that phenolic compounds act as antioxidants and thus protect the body against the adverse effects of oxidative reactions caused by free radicals. The objective of this study was to investigate the influence of red wine consumption on the antioxidant status and indices of oxidative stress in healthy adults.

Twenty free-living, healthy adults aged 23–50 years were randomly assigned to a control group or to consume 375 mL red wine (Bulgarian Young Vatted Cabernet Sauvignon) daily for 2 weeks. Fasting blood samples were collected at weekly intervals for the measurement of 6 carotenoids (lutein/zeaxanthin, β -cryptoxanthin, lycopene, α -carotene, and β -carotene), retinol, α - and γ -tocopherol, ascorbic acid, antioxidant capacity, phenolic compounds, conjugated dienes, thiobarbituric acid-reactive substances, homocysteine, and lipids. Compliance was assessed through the use of dietary records.

Red wine consumption was associated with a small but significant ($P \leq 0.05$) increase in plasma phenolic compound concentrations and correlated with a 7% increase in antioxidant capacity, that did not reach statistical significance. No change in the concentration of phenolic compounds or in antioxidant capacity was observed in the control group. Plasma concentrations of α - and γ -tocopherol, retinol, and ascorbic acid did not change significantly

after red wine consumption. No significant differences in plasma carotenoids were observed between the 2 study groups. Conjugated dienes in copper-oxidized low-density lipoproteins decreased significantly ($P = 0.026$), as did thiobarbituric acid–reactive substances ($P = 0.050$), in the red wine group; no changes in either substance were observed in the control group. HDL-cholesterol concentrations increased significantly ($P = 0.02$) after 2 weeks of red wine consumption; no change was observed in the control group. None of the other lipids measured or homocysteine changed significantly after red wine consumption, although there was a trend toward a reduction in homocysteine concentrations. Trace amounts of glucuronides and methyl glucuronides of (+)-catechin and (–)-epicatechin were detected in the plasma of the red wine group but not in the plasma of the control group. However, the amounts detected did not contribute significantly to the concentrations of total phenolic compounds measured. Of interest was the finding that, although the red wine consumed contained high amounts of anthocyanins and gallic acid, neither of these compounds were detected in the plasma of the subjects who consumed red wine and this finding has been reported in other studies. At this time it is unclear whether these constituents enter the circulatory system in trace amounts or are metabolized so rapidly that levels appear low in when tested.

In this study, daily moderate consumption for 2 weeks of red wine rich in gallic acid, flavan-3-ols, and anthocyanins resulted in a significant increase in the plasma concentration of total phenols. Furthermore, red wine consumption caused a modest significant increase in HDL-cholesterol concentrations and significant decreases in thiobarbituric acid–reactive substances and conjugated dienes. These findings "support the protective effects of red wine reported from previous epidemiologic studies and current medical opinion that moderate daily intake of red wine may reduce the risk of developing CHD."

—*Brenda Milot*

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