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Q/ Does red wine reduce cardiovascular risks?

Moderate daily red wine consumption decreases cardiovascular risk compared with either abstinence or heavy and binge drinking.

EVIDENCE-BASED ANSWER

A/ **YES.** Moderate daily red wine consumption decreases cardiovascular risk compared with either abstinence or heavy and binge drinking (strength of recommendation [SOR]: **B,** meta-analysis of prospective cohort and case-control studies); however, not enough evidence exists to determine whether wine reduces cardiovascular risk more than other alcoholic beverages.

A high dietary intake of flavonoids, contained in red wine and other food products, correlates with decreased mortality from coronary heart disease (CHD) (SOR: **B,** meta-analysis of prospective cohort studies).

Heavy alcohol drinking is associated with an increased risk of stroke, but data are lacking for low and moderate levels of wine consumption. (SOR: **B,** meta-analysis of prospective cohort and case-control studies).

Evidence summary

A 2-part meta-analysis of 26 studies enrolling men, women, or both, showed a significant inverse association between red wine consumption and fatal and nonfatal cardiovascular events. The first part, encompassing 13 studies (5 prospective cohort and 8 case-control studies with a total of 209,418 participants), compared moderate wine drinkers with nondrinkers and heavy or binge drinkers. Moderate drinkers consumed an average of 1 to 2 drinks per day.[1] This meta-analysis, and other studies described in this summary, defined a drink as 130 mL of wine with 12% ethanol content.

For all 13 studies combined, moderate wine drinking significantly reduced cardiovascular events at 2 to 24 years of follow-up compared with no drinking and heavy drinking (relative risk [RR]=0.68; 95% confidence interval [CI], 0.59-0.77). A pool of the 7 studies that enrolled both male and female participants also found that wine drinking significantly reduced cardiovascular events (RR=0.53; 95% CI, 0.42-0.68). However, pooled results from the 6 studies with exclusively male participants found no difference in cardiovascular events with wine consumption (RR=0.87; 95% CI, 0.68-1.12). Beer drinking, which was also evaluated, produced statistically significant risk reductions in studies of both men and women; the effect was smaller in men-only studies.[1]

CV risk decreases with increased wine intake—to a point

The second part of the meta-analysis, 7 prospective cohort and 3 case-control studies with a total of 176,042 participants, found an apparent J-shaped dose-response relationship between wine intake and cardiovascular risk reduction. Daily consumption ranged from 0 to 1738 mL, although most participants had 0 to 3 drinks (390 mL) per day. Data from the 7 prospective studies illustrated a progressive decrease in cardiovascular risk as wine intake increased to 150 mL per day. Consuming larger amounts of wine (as much as 750 mL per day) showed a trend toward further cardiovascular risk reduction, but the trend wasn't statistically significant.[1]

High flavonoid intake is associated with lower CHD mortality

A meta-analysis of 7 prospective cohort studies including 105,000 men and women 30 to 84 years of age indicated that a high dietary intake of flavonoids (present in larger amounts in red

wine, chocolate, tea, and other foods) correlated with reduced CHD mortality. Participants whose flavonoid consumption was in the highest third had significantly less CHD mortality than participants in the bottom third (RR=0.80; 95% CI, 0.69-0.93; *P*<.001). The meta-analysis couldn't determine whether the flavonoid content of red wine confers additional cardiovascular benefit beyond that of alcohol alone.[2]

Heavy drinking increases risk of stroke

A meta-analysis of 41 studies (3 cross-sectional, 21 case-control, and 17 cohort studies) enrolling both men and women, correlated heavy alcohol drinking (>4 drinks per day, on average) with increased risk of stroke. Seven of 9 retrospective studies associated heavy drinking with an increase in risk as great as 6.5-fold for hemorrhagic and ischemic stroke, but found no consistent association between stroke and light-to-moderate drinking. Evidence was insufficient to evaluate stroke risks specific to low or moderate wine intake.[3]

Recommendations

The US Department of Health and Human Services' *Dietary Guidelines for Americans 2005* state that moderate daily wine intake in adults (5 oz for women and 10 oz for men) is associated with the lowest all-cause mortality and CHD. The guidelines warn against drinking by people who are susceptible to the harmful effects of alcohol and participants in activities that require attention, skill, or coordination.[4]

The American Heart Association states that moderate alcohol consumption (1-2 drinks daily) may be considered safe in the absence of contraindications, and recommends consulting a physician first.[5]

The National Institute on Alcohol Abuse and Alcoholism of the National Institutes of Health says that moderate drinkers are less likely to die from coronary artery disease than are people who don't drink any alcohol or who drink more alcohol. It recommends against nondrinkers starting to drink solely to benefit their hearts, however.[6] JFP

The National Institute on Alcohol Abuse and Alcoholism says that nondrinkers should not start drinking solely to benefit their hearts.

References

1. Di Castelnuovo A, Rotondo S, Iacoviello L, et al. Meta-analysis of wine and beer consumption in relation to vascular risk. *Circulation*. 2002;105:2836-2844.
2. Huxley RR, Neil HA. The relation between dietary flavonol intake and coronary heart disease mortality: a meta-analysis of prospective cohort studies. *Eur J Clin Nutr*. 2003;57:904-908.
3. Mazzaglia G, Britton AR, Altmann DR, et al. Exploring the relationship between alcohol consumption and non-fatal or fatal stroke: a systematic review. *Addiction*. 2001;96:1743-1756.
4. US Department of Health and Human Services and US Department of Agriculture. *Dietary Guidelines for Americans 2005*. 6th ed. Washington, DC: US Government Printing Office; January 2005:43-46. Available at: www.health.gov/dietaryguidelines/dga2005/document/pdf/DGA2005.pdf. Accessed August 20, 2009.
5. Goldberg IJ, Mosca L, Piano MR, et al. AHA science advisory: wine and your heart: a science advisory for healthcare professionals from the Nutrition Committee, Council on Epidemiology and Prevention, and Council on Cardiovascular Nursing of the American Heart Association. *Circulation*. 2001;103:472-475.
6. National Institute on Alcohol Abuse and Alcoholism. Is alcohol good for your heart? Available at: www.niaaa.nih.gov/FAQs/General-English/default.htm#heart. Accessed August 20, 2009.