

# Effects of alcohol on risk factors for cardiovascular disease

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A summary paper on the effects of alcohol consumption on biologic mechanisms associated with coronary heart disease provides an excellent review of a large number of intervention studies in humans. Appropriate analyses were done and the results are presented in a very clear fashion, although there was little discussion of the separate, independent effects of alcohol and polyphenols on risk factors.

The trials the authors reviewed have demonstrated that the moderate intake of [alcoholic beverages](#) leads to increases in HDL-cholesterol ([good cholesterol](#)), apolipoprotein A1, and adiponectin and decreases in fibrinogen, all factors associated with a lower risk of heart disease. The findings described in this paper strengthen the case for a causal link between alcohol intake and a reduced risk of [coronary heart disease](#), suggesting that the lower risk of heart disease observed among moderate drinkers is caused by the alcoholic beverage itself, and not by other associated [lifestyle factors](#).

The reviewers independently selected studies that examined adults without known cardiovascular disease and that compared fasting levels of specific biological markers associated with coronary heart disease after alcohol use with those after a period of no alcohol use (controls). A total of 4,690 articles were screened for eligibility, the full texts of 124 studies reviewed, and 63 relevant articles selected. Of 63 eligible studies, 44 on 13 biomarkers were meta-analysed in fixed or random effects models. Quality was assessed by sensitivity analysis of studies grouped by design. Analyses were stratified by type of beverage (wine, beer,

spirits).

The authors concluded that favourable changes in several cardiovascular biomarkers (higher levels of high density lipoprotein cholesterol and [adiponectin](#) and lower levels of fibrinogen) provide indirect pathophysiological support for a protective effect of moderate alcohol use on coronary heart disease.

## Forum Comments

There have been thousands of basic science studies showing that administering alcohol or wine to laboratory animals results in beneficial effects on the risk of atherosclerosis and heart disease. The present excellent paper summarizes what are now a large number of human trials testing whether wine and/or alcohol have the same effects on reducing risk factors for CVD. There have not yet been randomized clinical trials to evaluate the effects of alcohol administration on cardiovascular outcomes such as myocardial infarction, cardiac death, or other cardiovascular diseases (CVD) in humans. It is unlikely that such studies will be done because of the long time of follow up required, the huge cost, and the difficulties in getting a very large number of people randomly assigned to agree to consume a specified amount of alcohol, or agree to avoid all alcohol, for many years. For these lifestyle habits, we must use our best judgment based on carefully done observational studies, research into potential mechanisms of effect, and studies of intermediate outcomes that are in pathways and processes in the development of the disease.

The second paper looked at cohort studies on the association between alcohol consumption and overall mortality from cardiovascular disease, incidence of and mortality from coronary heart disease, and incidence of and mortality from stroke. 4,235 studies were reviewed for eligibility, quality and data extraction, 84 were included in the final analysis.

Dose-response analysis revealed that the lowest risk of coronary heart disease mortality occurred with 1-2 drinks a day, but for stroke mortality it occurred with =1 drink per day. Secondary analysis of mortality from all causes showed lower risk for drinkers compared with non-drinkers (relative risk 0.87 (0.83 to 0.92)).

The authors concluded that light to moderate alcohol consumption is associated with a reduced risk of multiple cardiovascular outcomes.

Summary of Forum review: In an excellent summary, the authors of this paper have synthesized results from longitudinal cohort studies comparing alcohol drinkers with non-drinkers for the outcomes of overall mortality and mortality from cardiovascular disease (CVD), incident coronary heart disease (CHD), mortality from CHD, incident stroke, and mortality from stroke. They conclude that light to moderate alcohol consumption is associated with a reduced risk of multiple cardiovascular outcomes. Further, they suggest that current scientific data satisfy Hill criteria indicating causality, that alcohol intake is the cause of the lower risk of cardiovascular disease among moderate drinkers.

ISFAR members thought that this was a very well done, comprehensive summary of a large number of studies on alcohol and cardiovascular disease. ISFAR welcomed the discussion in the paper as to causality and regarding future directions in research, with more emphasis into how physicians and individual patients might respond to encouragement to consume alcohol for its potentially beneficial effects on cardiovascular disease. Most believe that there is no substitute for balanced judgment by a knowledgeable, objective health professional when discussing [alcohol intake](#), and this requires a synthesis of common sense and the best available scientific facts as they apply to the individual.

Members also emphasised that: It is unlikely that there will ever be

adequate clinical trials to judge the effects of alcohol consumption on major cardiovascular outcomes such as myocardial infarction or cardiac death in humans. Hence, for these lifestyle habits, we must use our best judgment based on carefully done observational studies, research into potential mechanisms of effect, and studies of intermediate outcomes that are in the pathways and processes in the development of disease.

The results of this 2011 meta-analysis are in line with what we know from the previous meta-analyses and the many individual studies: risk reductions for alcohol drinkers relative to non-drinkers of 25% for cardiovascular disease mortality, 29% for incident coronary heart disease, 25% for CHD mortality and 13 % for all cause mortality. The lowest risk of CHD mortality occurred with 1-2 drinks (15-30 grams of alcohol) per day is also in line with previous knowledge.

Messages to the public: Forum member Erik Skovenborg stated: "The public health messages should (and in many countries do) acknowledge the reduced risk of incidence and mortality of coronary heart disease associated with moderate drinking. However, we should not expect official recommendations of light drinking on a par with exercise, vegetables, and not smoking. The caveats would be too many, and official recommendations should be based on prospective, randomized studies. The role of alcohol drinking is best discussed in a scenario of a patient taking medical advice from his personal physician."

Professor Arthur Klatsky also had pertinent comments on this topic: "In the final section of the paper the authors are struggling with the matter of advice. They are trying to come up with a new angle. We should keep in mind that many practitioners have been interacting with their patients about the benefits of light-moderate drinking for years. An overwhelming majority of persons (at least in our Northern California area) have heard of the benefits of light drinking, with many believing that this is specific for red wine. Some do not believe it as, no doubt, do

some practitioners. The emotional baggage many have about alcohol will not go away. For these reasons, my enthusiasm is limited for the authors' suggested approach of 'evaluating the receptivity of both physicians and patients' to recommendations to drink moderately....having practiced cardiology for 50 years, it is clear to me that all advice — even upon matters with good evidence — needs individualization. With respect to light-moderate drinking, I'll quote the final sentences of my JACC Editorial from 2010: 'The risks of moderate drinking differ by sex, age, personal history, and family history. As is often the case in medical practice, advice about lifestyle must be based on something less than certainty. There is no substitute for balanced judgment by a knowledgeable, objective health professional. What is required is a synthesis of common sense and the best available scientific facts.'

**More information:** References:

1. Brien SE, Ronksley PE, Turner BJ, Mukamal KJ, Ghali WA. Effect of alcohol consumption on biological markers associated with risk of coronary heart disease: systematic review and meta-analysis of interventional studies. *BMJ* 2011;342:d636; [doi:10.1136/bmj.d636](https://doi.org/10.1136/bmj.d636)
2. Ronksley PE, Brien SE, Turner BJ, Mukamal KJ, Ghali WA. Association of alcohol consumption with selected cardiovascular disease outcomes: a systematic review and meta-analysis. *BMJ* 2011;342:d671; [doi:10.1136/bmj.d671](https://doi.org/10.1136/bmj.d671)

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