Review: a mean alcohol intake of 30 g/day is associated with benefits for some biological markers of coronary artery disease


QUESTION: What is the association between moderate alcohol intake and biological markers of risk of coronary artery disease (CAD)?

Data sources
Studies were identified by searching Medline (1966–98), bibliographies of review articles, and proceedings of meetings and symposia and by handsearching the Journal of the Alcohol Beverage Medical Research Foundation and Alcohol Research.

Study selection
Studies published in English were selected if participants did not have diagnosed CAD, diabetes, or alcohol dependence and if biomarkers related to the risk of CAD were assessed. Studies on lipid factors were included only if the intervention period was ≥7 days. All studies of coagulation and thrombolytic factors were included. Studies of lipid peroxidation and platelet aggregation and studies in which >100 g/day of ethanol were consumed were excluded.

Data extraction
2 reviewers extracted data on participants (number, age range, and sex), average dose of alcohol, study duration, beverage type, and the change in concentration of a biological marker. Differences were resolved by consultation.

Main results
42 experimental studies with 61 comparisons met the selection criteria. The drinking of alcohol, mean 30 g/day, led to an increase in concentrations of high density lipoprotein cholesterol (36 comparisons), apolipoprotein A I (24 comparisons), and triglycerides (35 comparisons) (p < 0.05 for all comparisons) (table). No difference between drinking alcohol and abstaining was seen for concentrations of tissue type plasminogen activator antigen, fibrinogen, or Lp(a) lipoprotein (table).

Conclusion
A mean consumption of 30 g of alcohol per day is associated with increases in concentrations of high density lipoprotein cholesterol, apolipoprotein A I, and triglycerides.

<table>
<thead>
<tr>
<th>Biological markers</th>
<th>Number of comparisons</th>
<th>Weighted mean increase (95% CI)</th>
<th>Weighted mean decrease (CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High density lipoprotein cholesterol (mg/dl)</td>
<td>36</td>
<td>3.99 (3.25 to 4.73)</td>
<td></td>
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<tr>
<td>Apolipoprotein A I (mg/dl)</td>
<td>24</td>
<td>8.82 (7.79 to 9.86)</td>
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<tr>
<td>Triglycerides (mg/dl)</td>
<td>35</td>
<td>5.69 (2.49 to 8.89)</td>
<td></td>
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<tr>
<td>Tissue type plasminogen activator antigen (ng/ml)</td>
<td>Not reported</td>
<td>1.25 (~0.31 to 2.81)*</td>
<td></td>
</tr>
<tr>
<td>Lp(a) lipoprotein (mg/dl)</td>
<td>5</td>
<td>0.70 (~3.38 to 1.99)*</td>
<td></td>
</tr>
<tr>
<td>Fibrinogen (mg/dl)</td>
<td>Not reported</td>
<td>7.50 (~17.70 to 32.70)*</td>
<td></td>
</tr>
</tbody>
</table>

*Not statistically significant.

COMMENTARY
The cardiovascular benefits of consuming alcohol have been of particular interest during the last decade. Studies included in this meta-analysis by Rimm et al for effects on lipoproteins and other biomarkers had relatively small sample sizes, involved predominantly younger (<50 y of age) and male (82% of total sample) participants, and studied the effects of alcohol consumption over a short duration (range 1 day to 3 mo). Meta-analytic methods enable pooling of studies to enhance the sample size and the effect of the intervention.

In everyday terms, “moderate alcohol consumption” represents approximately 30 g of alcohol per day (eg, 24 oz or 720 ml of regular beer; 10 oz or 300 ml of table wine; 2 oz or 60 ml of spirits). As the authors indicate, there is “a decreased first pass metabolism of alcohol among women that may accentuate... (its) effects”. In fact, recommendations exist that women and lighter weight people consume one half of the alcohol that is recommended for men.

The fundamental and enticing question is whether to advocate moderate alcohol intake to enhance lipid profiles and reduce the risk of CAD. Multiple reasons exist why people should not be encouraged to consume alcohol, including loss of concentration, potential for dependency, and the risk to the fetus in pregnant women. This study provides clear evidence that, for a certain subset of people, moderate alcohol consumption over a limited period has a positive effect on lipoproteins while having a negative effect on triglycerides. Questions remain regarding the potential benefit or risk for others and regarding the effects of long term alcohol consumption. The most effective “dose” (particularly for women) and source of alcohol are also yet to be established. For women, the hormonal/menopausal interactions with alcohol metabolism also need to be investigated more thoroughly. At this time, it likely remains clinically prudent to advocate other lifestyle changes known to enhance lipoprotein profiles (eg, low fat, high fibre diet; and regular exercise).

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