

Different impact of alcohol consumption on the reverse cholesterol transport in vivo

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Epidemiological studies revealed that moderate and binge alcohol consumption exerts opposite effect on cardiovascular disease. Atherosclerotic cardiovascular disease is inversely correlated with reverse cholesterol (RCT), the process promoting the removal of excess cholesterol from arterial wall.

We aim to evaluate whether moderate and binge alcohol consumption may differently impact RCT in an animal model of atherosclerosis-prone mice.

RCT was measured through a standardized, radiolabeled technique in apolipoprotein E knockout mice: placebo group (n=9) received water, mimicking the abstainers; moderate group (n=10) received 0.8g/kg alcohol/day for 28 days, mimicking a moderate alcohol consumption; binge group (n=10) received 0.8g/kg alcohol/day for 5 days, followed by the administration of 2.8g/kg alcohol/day for 2 days/week, mimicking a binge alcohol consumption.

Binge alcohol consumption caused an increase of 37.2 % in plasma total cholesterol and an increase of 44.35 % in HDL-C levels versus placebo group. Binge group also showed an increase of 30.95% in LDL-C and an increase of 23% in triglycerides compared to placebo group. Conversely, moderate consumption does not affect plasma lipoprotein profile. The removal of radioactivity from macrophages along RCT pathway was higher in the moderate group (12.2%±3.1, 15.1%±3.7, 13.3%±2.4 in placebo, moderate and binge group respectively).

In conclusion, moderate alcohol consumption promotes the removal of cholesterol from macrophages along RCT pathway. Conversely binge alcohol consumption exerts deleterious effects on lipoprotein profile, but it does not seem to significantly affect RCT process.