

Depression reverses the anti-inflammatory properties of mild to moderate alcohol consumption



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Alcohol Consumption, All-Cause Mortality and CVD outcomes

- Light to moderate alcohol consumption is associated with decreased all-cause mortality as well as reduced risk of multiple cardiovascular outcomes.
- Mechanisms underlying this association remain uncertain.

Putative Mechanisms

- **Lipoproteins**
 - Increased HDL
 - Decreased LDL
- **Hemostatic factors**
 - Fibrinogen
 - Plasma viscosity
 - Von Willebrand factor
 - Factor VII

Inflammation

- Inflammation plays a major role in mediating atherosclerotic plaque stability.
- Markers of inflammation such as C-reactive protein (CRP) predict future cardiovascular disease risk.
- Light-to-moderate alcohol consumption is associated with lower CRP.

Depression, CVD and Inflammation

- Depression and severity of depressive symptoms are associated with future CVD risk.
- Depression and severity of depressive symptoms are associated with higher levels of inflammatory biomarkers, such as CRP.
- Low-level chronic inflammation may underlie the relation of depression and severity of depressive symptoms to future cardiac events.

Specific Aim

To determine if current depressive status moderates the relation of alcohol consumption to C-reactive protein in a sample of 229 apparently healthy, non-smoking men and women, aged 18-65 years.

Demographics

	<u>Mean (SD)</u>	<u>Range</u>
Age, y	29 (10)	19-65
BMI, kg/m ²	25.2 (24)	17-43
Beck Depression Inventory	4 (4)	0-27
CRP, mg/L	Median = 0.7	0.1-9.9
Gender	45% female	
Race	Caucasian	55%
	African-American	27%
	Other	18%
Alcohol consumption	None	25%
	Infrequent	32%
	Occasional/Regular	43%

Univariate Results

<u>Alcohol Use Level</u>	<u>Alcohol g/day</u> <u>(Mean + SEM)</u>
None	0
Infrequently	1.8 (2.6)
Occasionally/ Regularly	13.3 (1.3)

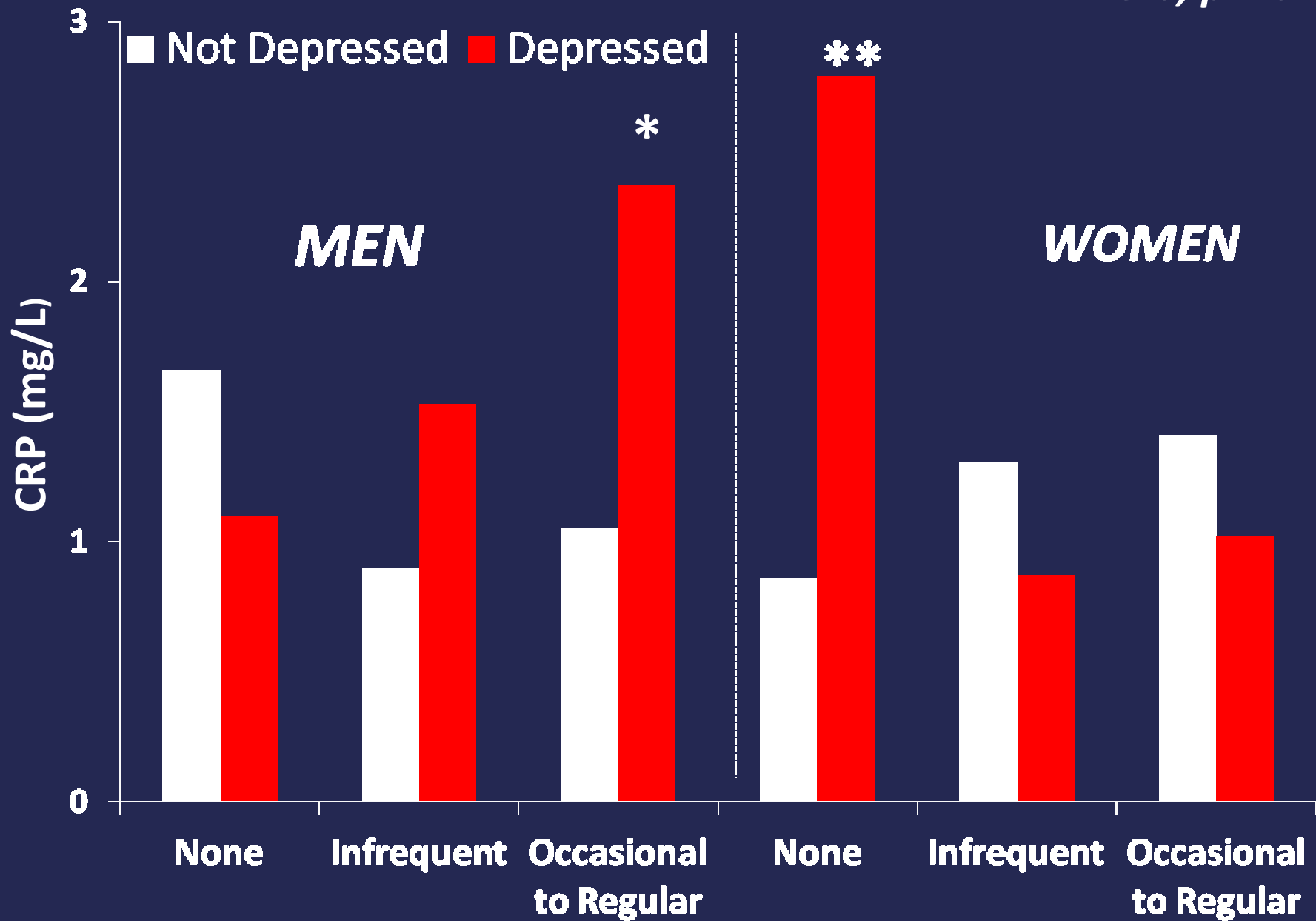
Beer – 12.8 g; Wine – 11.0 g; Liquor (shot)– 14.0 g

Alcohol Consumption

<u>Alcohol Group</u>	<u>Age</u>	<u>BMI</u>	<u>CRP</u>
None	31.3 (1.7)	26.6 (0.6)	1.8 (0.2)
Infrequent	28.4 (1.2)	24.8 (0.6)	1.2 (0.2)
Occasional/ Regular	27.9 (1.0)	24.6 (0.5)	1.3 (0.2)

Alcohol group x Depression x Sex

F = 5.0, p = 0.02



Depression and Gender moderates the relation of Alcohol Consumption to All-cause Mortality

- **National Alcohol Survey Study of 5177 men and women. 11 year follow-up, 549 deaths**
- **Depression x alcohol consumption x gender interaction predicting all-cause mortality.**
- **For men, highest relative risk among heavy drinkers who were depressed.**
- **For women, highest relative risk among former drinkers who were depressed.**

Putative Mechanisms of Actions of Alcohol effects on CRP

- **Antioxidant properties through polyphenolic content. Activation of the estrogen receptor alpha.**
- **Impairment of interleukin-6 production.**

Summary

- The relation of alcohol consumption to CRP concentration differs as a function of gender and current depressive status
- For men, occasional/regular alcohol consumption is associated with significantly higher CRP in those currently depressed relative to non-depressed men.
- For women, light-to-moderate alcohol consumption is associated with low CRP. Depressed women who abstain from alcohol exhibit the highest CRP.



THANK YOU