Alcohol Consumption and Its Effects on Insulin Sensitivity and Glycemic Status

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Study finds type 2 risk in non-diabetic patients decreased…

Moderate alcohol consumption can reduce the risk for type 2 diabetes as compared to heavy drinking, and the risk reduction differs between men and women. In a previous study, alcohol consumption of 24 g alcohol/day reduces type 2 diabetes risk by 40% in women compared to 13% in men with 22 g alcohol/day consumption. The effects of alcohol consumption and type 2 diabetes includes increased insulin sensitivity, anti-inflammatory effects, or effects of adiponectin. These pathways have been closely studied in the past. For example, Brien et al showed alcohol consumption increased adiponectin, but no effects on inflammation, and no quantitative result on insulin sensitivity. Some studies suggest a positive correlation between alcohol consumption and insulin sensitivity, but the data were inconsistent or showed no effects. The aim is to investigate the effects of alcohol consumption on insulin sensitivity using meta-analysis of intervention studies.

PubMed and Embase were used to search for articles published up to August 2014. References and related citation were also screened for relevant articles. The primary outcome was the relationship between insulin sensitivity and alcohol consumption. Inclusion criteria included randomized trials, trials with an alcohol intervention, trials with an alcohol-free control group, relevant outcome measures as previously described, intervention period of at least 2 weeks, and articles written in English or Dutch. Exclusion criteria included patients with a history of alcoholism or heavy drinkers and animal studies. Data on study characteristics, outcome measures, and methodological quality were extracted and analyzed.

A total of 14 studies were included in the meta-analysis. The study showed that alcohol consumption had no effects on insulin sensitivity (standardized mean difference [SMD] 0.08 [-0.09 to 0.24]) or fasting glucose (SMD 0.07 [-0.11 to 0.24]) compared to the non-alcohol group. However, alcohol consumption reduced HbA1C (SMD -0.62 [-1.01 to -0.23]) and fasting insulin concentrations (SMD -0.19 [-0.25 to -0.02]). Alcohol consumption was also shown to improve fasting insulin (SMD -0.23 [-0.41 to -0.04]) and insulin sensitivity (SMD 0.16 [-0.04 to 0.37]) in women only. These results are not influenced by alcohol dosages or duration of the intervention.

Despite some study bias such as small sample size and short duration, it was suggested that moderate alcohol consumption might reduce fasting insulin and HbA1C concentrations in patients without diabetes. Insulin sensitivity in women may also be improved, but overall insulin sensitivity and fasting glucose levels were not affected. However, further research studies are needed to confirm the results.

Practice Pearls:

- Moderate alcohol consumption reduced fasting insulin and HbA1C in nondiabetic patients.
- Insulin sensitivity among women may also be improved with alcohol consumption.
- Moderate alcohol consumption resulted in lower risk of type 2 diabetes.

Schrieks et al. "The Effect of Alcohol Consumption on Insulin Sensitivity and Glycemic Status: A Systematic Review and Meta-analysis of Intervention Studies."Diabetes Care 2015;38:723-732.