

# Cigarette smoke, alcohol damage hearts worse as combo

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Tobacco smoke-filled air is bad for cardiovascular health, and drinking alcohol at the same time only makes it worse, according to researchers at the University of Alabama at Birmingham (UAB).

Testing the theory that moderate alcohol consumption provides some heart-protection benefits, the UAB team said it wanted to take the idea further and look at the effects of smoking and breathing second-hand smoke along with drinking.

They reported that mice exposed to smoky air in a laboratory enclosure and fed a liquid diet containing ethanol, the intoxicating ingredient in alcohol, had a 4.7-fold increase in artery lesions. That compares to mice who breathed filtered air and ate a normal solid diet.

Artery lesions are a common problem in heavy smokers and a key sign of advancing cardiovascular disease. The results are published in the journal *Free Radical Biology & Medicine*.

The researchers reported mice solely exposed to the smoky air had a 2.3-fold increase in artery lesions when compared to mice who breathed filtered air. Mice solely fed a liquid diet containing ethanol had a 3.5-fold increase in artery lesions when compared to mice fed a normal diet.

The study points to a greater need to understand the negative biological impact of single or multiple risky behaviors, and the compounding effect

of environmental hazards such as second-hand smoke, said Scott Ballinger, Ph.D., an associate professor in the UAB Department of Pathology and lead author on the study.

“Our study shows that exposure to cigarette smoke when combined with alcohol consumption caused the greatest degree of cardiovascular disease development compared to either action or exposure alone,” Ballinger said.

“Because moderate alcohol consumption is commonly thought to be cardioprotective, these findings are important for smokers and non-smokers alike in terms of what you should and should not do to protect their health,” said Shannon Bailey, Ph.D., an associate professor in the UAB Department of Environmental Health Sciences and a co-investigator on the study.

The mice experiments were performed over a five-week period. Blood-alcohol concentrations reached the equivalent of a 150-pound adult consuming 2 drinks per hour. Cigarette smoke exposure was similar to being in an automobile with a chain smoker with the windows closed.

In addition to measuring artery lesions in the study mice, the UAB team looked at other signs of advancing cardiovascular disease like DNA damage and oxidative stress in key heart tissues.

Like the artery lesions, these added measurements showed that taking in both smoky air and ethanol had the effect of basically nullifying any potential heart benefit from drinking alcohol by itself.

Source: University of Alabama at Birmingham

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