

Single episode of binge drinking can adversely affect health, study says

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It only takes one time. That's the message of a new study by scientists at the University of Massachusetts Medical School on binge drinking. Their research found that a single episode of binge drinking can have significant negative health effects resulting in bacteria leaking from the gut, leading to increased levels of toxins in the blood. Published online in *PLOS ONE*, the study showed that these bacterial toxins, called endotoxins, caused the body to produce immune cells involved in fever, inflammation, and tissue destruction.

"We found that a single alcohol binge can elicit an immune response, potentially impacting the health of an otherwise healthy individual," said lead author Gyongyi Szabo, MD, PhD, professor of medicine, vice chair of the Department of Medicine and associate dean for clinical and translational sciences at UMMS. "Our observations suggest that an alcohol binge is more dangerous than previously thought."

Binge drinking is defined by National Institute on Alcohol Abuse and Alcoholism (NIAAA) as a pattern of <u>drinking alcohol</u> that brings <u>blood</u> <u>alcohol concentration</u> (BAC) to 0.08g/dL or above. For a typical adult, this corresponds with consuming five or more drinks for men, or four or more drinks for women, in about two hours, depending on body weight.

Binge drinking is known to pose safety risks associated with car crashes and injuries. Over the long term, <u>binge drinking</u> can damage the liver and other organs, but this is key evidence that a single alcohol binge can cause damaging health effects such as bacterial leakage from the gut into



the blood stream, according to a statement released by George Koob, PhD, director of the NIAAA.

To assess the impact of binge drinking, 11 men and 14 women were given enough alcohol to raise their <u>blood alcohol levels</u> to at least .08 g/dL within an hour. Blood samples were then taken every 30 minutes for four hours after and again 24 hours later.

Szabo and colleagues found that the alcohol binge resulted in a rapid increase in endotoxin levels in the blood. Endotoxins are toxins contained in the cell wall of certain bacteria that are released when the cell is destroyed. They also found evidence of bacterial DNA in the bloodstream, showing that bacteria had permeated the gut. Compared to men, women had higher blood alcohol levels and circulating endotoxin levels.

Earlier studies have tied chronic alcohol use to increased gut permeability, wherein potentially harmful products can travel through the intestinal wall and be carried to other parts of the body. Greater gut permeability and increased endotoxin levels have been linked to many of the health issues related to chronic drinking, including <u>alcoholic liver</u> <u>disease</u>.

Provided by University of Massachusetts Medical School

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