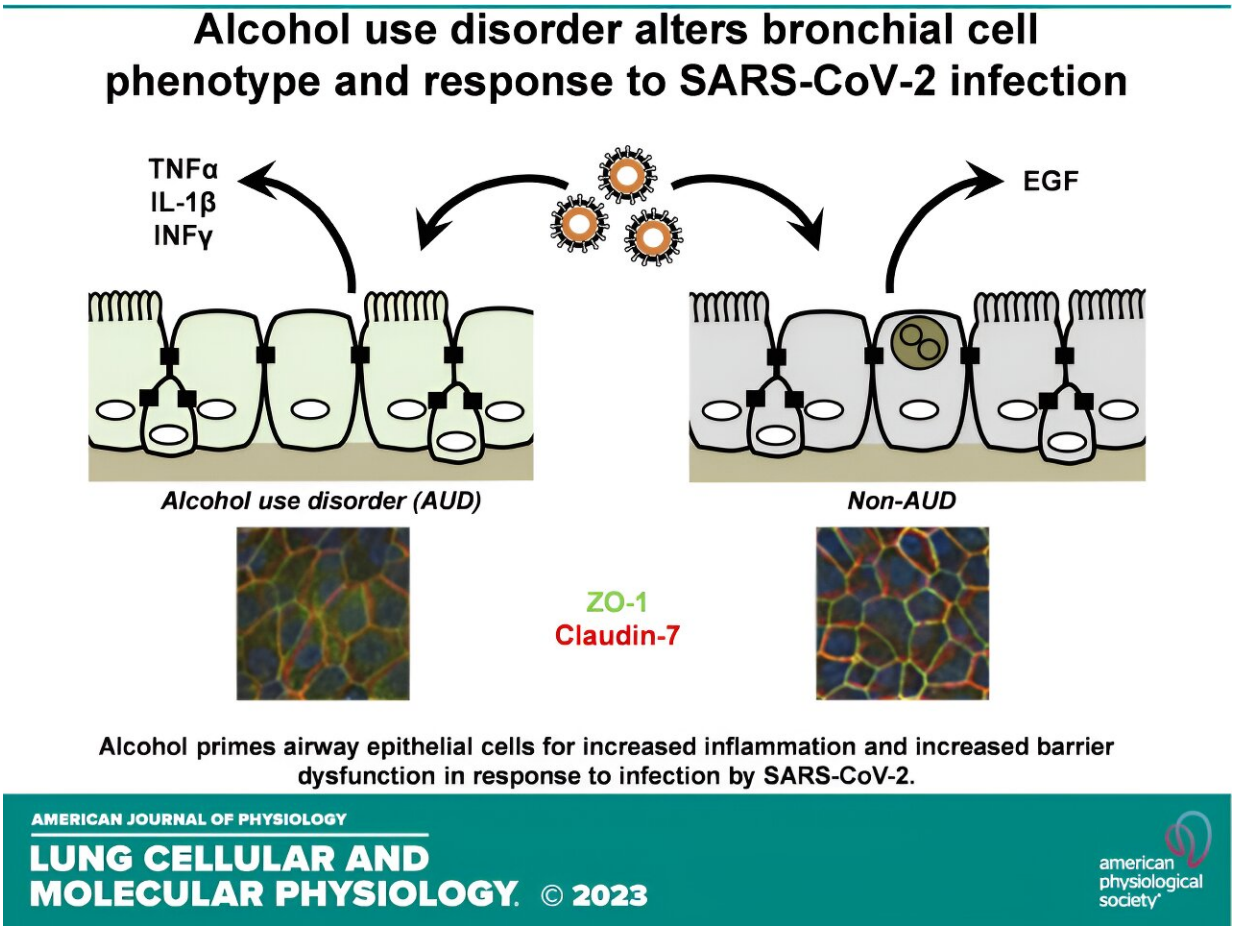
Medical Xpress

Alcohol abuse increases sensitivity of coronavirus infection

December 12 2023



Credit: *American Journal of Physiology-Lung Cellular and Molecular Physiology* (2023). DOI: 10.1152/ajplung.00381.2022

Lung airway cells of people with alcohol use disorder developed "enhanced inflammation" three days after being infected with SARS-CoV-2, the virus that causes COVID-19, according to a new study from Emory University School of Medicine in Atlanta and the University of Georgia.

An analysis of gene expression found that uninfected airway cells from people with alcohol use disorder ("AUD") had mild pro-inflammatory characteristics that were amplified after SARS-CoV-2 infection when compared to cells not exposed to excessive alcohol use ("control"). In addition, control cells infected with the virus showed a protective response not seen in the AUD cells.

The findings are published in the *American Journal of Physiology-Lung Cellular and Molecular Physiology*. It has been chosen as an APSselect article for December.

To achieve their findings, researchers isolated cells from the inside of the airway of people with and without alcohol use disorder. Next, the cells were cultured to create a model airway epithelium. Gene expression was analyzed by next-generation RNA sequencing to measure the effect of chronic alcohol exposure on airway cells. The research team then infected the cells with SARS-CoV-2 and measured the production of inflammatory factors.

People with alcohol use disorder who also have COVID-19 have higher rates of hospitalization and death. This indicates that chronic alcohol use puts people at risk for increased severity of COVID-19 related illness.

By conducting this study, Michael Koval, Ph.D., of Emory's Division of Pulmonary, Allergy, Critical Care and Sleep Medicine, and his team determined that alcohol abuse causes lung airway cells to over-react to SARS-CoV-2 infection, which may increase the severity of early stages

of COVID-19.

More information: Kristen F. Easley et al, Chronic alcohol use primes bronchial cells for altered inflammatory response and barrier dysfunction during SARS-CoV-2 infection, *American Journal of Physiology-Lung Cellular and Molecular Physiology* (2023). DOI: 10.1152/ajplung.00381.2022

Provided by American Physiological Society