

Testing for damage to airways caused by drinking and smoking

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Cells in the lung are constantly exposed to oxygen and intermittently exposed to other environmental factors, resulting in a susceptibility to oxidative injury.

Both alcohol use disorders (AUDs) and cigarette smoking heighten pulmonary [oxidative stress](#), likely due to antioxidant depletion. Pulmonary oxidative stress damages innate immunity, which can contribute to increased pneumonia susceptibility and severity. This study sought to understand whether measures of pulmonary oxidative stress in upper airway fluid are comparable to measures in the lower airways, and whether either compartment is preferentially affected by AUDs and/or smoking. If upper airways' and lower airways' oxidative stress indices are similar, less invasive methods to assess pulmonary oxidative stress, such as mini-bronchoalveolar lavage (mini-BAL) or sputum evaluations, could be used in research and clinical settings.

Researchers recruited 81 participants, with and without AUDs, smokers and non-smokers, to undergo bronchoalveolar lavage (BAL). Samples representative of bronchial airways as well as the alveolar space were obtained, and measures of thiol antioxidants were calculated.

Results showed that analyzing fluid collected after instilling 50 ml (~3 tablespoonsful) of fluid during a BAL procedure may be suitable for assessing intrapulmonary oxidative stress related to thiol depletion in the distal lung. Findings also indicated that AUDs and smoking may disproportionately increase upper airways oxidative stress. These

findings could inform future therapeutic interventions.

More information: Ellen L. Burnham et al. The Relationship Between Airway Antioxidant Levels, Alcohol Use Disorders, and Cigarette Smoking, *Alcoholism: Clinical and Experimental Research* (2016). [DOI: 10.1111/acer.13201](https://doi.org/10.1111/acer.13201)

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