

# New study compares the effects of direct exposure to cigarette smoke or e-cigarette vapor

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Credit: AI-generated image ([disclaimer](#))

Researchers reported changes in the expression levels of 123 genes when reconstituted lung tissue was exposed to cigarette smoke, compared to only two genes that could be confirmed following exposure to e-cigarette aerosols. They also reported increased levels of several cytokines, which

are biomarkers of inflammation, in the lung tissue model exposed to conventional cigarette smoke, as described in the study published in *Applied In Vitro Toxicology*, a peer-reviewed publication from Mary Ann Liebert, Inc., publishers. The article is part of a special issue on Next Generation Nicotine Products and is available to media contacts upon request.

Anisha Banerjee and coauthors from British American Tobacco R&D Centre (Southampton, U.K.) used a commercially available 3D airway culture system comprised of reconstituted human epithelium, which mimics the structure and functions of human [lung tissue](#). The researchers demonstrate how this model system, together with a protocol designed to deliver matched, repeated exposures to smoke or aerosol over a short period, can be applied in the laboratory to assess potential toxicity.

In the article entitled "Differential Gene Expression Using RNA-seq Profiling in a Reconstituted Airway Epithelium Exposed to Conventional Cigarette Smoke or Electronic Cigarette Aerosols," they describe the molecular techniques used to measure [gene expression](#) and inflammatory biomarker levels.

"Next generation sequencing is revolutionizing and expanding the frontiers of genomic research to unravel the genetic information from any biological system," explains Dr. Banerjee.

"The utilization of new human 3D lung models in combination with the latest gene expression technologies to evaluate the effects of conventional [cigarette smoke](#) versus electronic cigarette aerosols demonstrates how in vitro models can be used to understand biological effects," says Jim McKim, PhD, Editor-in-Chief of *Applied In Vitro Toxicology* and Founder and CEO, IonTox, LLC.

Provided by Mary Ann Liebert, Inc

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