

Smoking out the mediators of airway damage caused by pollutants

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New insight into how pollution and cigarette smoke damage airways has been provided by Pierangelo Geppetti and colleagues, at the University of Florence, Italy, who studied the effects of such chemicals on guinea pig airways. As discussed, in an accompanying commentary, by Sidney Simon and Wolfgang Liedtke, at Duke University Medical Center, it is hoped that this information will help in the development of therapeutics to combat the effects of pollutants and perhaps help individuals with smoke-related diseases such as chronic obstructive pulmonary disease and chronic asthma.

In the study, chemicals found in cigarette smoke were shown to activate signaling in nerves that ended in the airways of guinea pigs. These effects were abolished using a molecule that inhibited a protein known as TRPA1.

Consistent with a central role for TRPA1 in sensing chemicals in cigarette smoke, no signaling in nerves that end in the airways was observed in mice lacking TRPA1 after exposure to the chemicals in cigarette smoke. Further analysis showed that alpha,beta-unsaturated aldehydes were the chemicals that activated TRPA1, suggesting that they might contribute to the airway damage that occurs in smoke-related diseases.

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