Downregulation of miR-126 augments DNA damage response

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(HealthDay)—For cigarette smokers and patients with chronic obstructive pulmonary disease (COPD), downregulation of microRNA-126 (miR-126) augments DNA damage response (DDR), according to a letter to the editor published online July 28 in the *American Journal of Respiratory and Critical Care Medicine*.

Koralia E. Paschalaki, M.D., Ph.D., from Imperial College London, and colleagues examined the correlation between miR-126 and DDR signaling in COPD. Male C57BL/6 mice were challenged for 28 days with cigarette smoke or ambient air to assess DDR in vivo.

The researchers found that in blood outgrowth endothelial cells (BOECs) from COPD patients, ataxia-telangiectasia-mutated (ATM) phosphorylation was significantly increased compared with non-smokers. BOECs from smokers and COPD patients had reduced levels of miR-126 compared with non-smokers. Inhibition of miR-126 function in human umbilical vein endothelial cells increased expression of p85 and SPRED1, and ATM mRNA and protein levels were also increased. In in vivo studies, miR-126 levels were reduced in lungs from mice exposed to cigarette smoke; increased ATM expression and activity were seen in the same samples. Reduced miR-126 levels were also seen in lung epithelial cells from COPD patients (all current or ex-smokers) versus non-smokers.

"In this study, we demonstrate that chronic exposure to cigarette-smoke causes reduced expression of miR-126 and increases the DDR," the authors write.

More information: Abstract
Full Text (subscription or payment may be required)