

Acid reflux cancer link

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Esophageal adenocarcinoma (EA) is an increasingly common cancer that silently affects the esophagus – the muscular tube that moves food into stomach. What causes EA is not well known but gastroesophageal reflux disease (GERD), characterized by chronic heartburn/acid reflux, is the strongest known risk factor.

Now in a study published in the journal *Scientific Reports*, Alexander Zaika, Ph.D. and coworkers show that DNA damage in the esophageal cells caused by acidic bile reflux (BA/A) activates enzymes called NADPH oxidases in the mitochondria, the cell's power house, to release highly reactive-oxygen species (ROS).

Zaika and his team identified two specific enzymes, NOX1 and NOX2, which were responsible for ROS generation. When they blocked NOX1 and NOX2 with small interfering RNA (siRNA) or chemical inhibitors, ROS production and DNA damage induced by BA/A was significantly reduced.

Inhibition of ROS induced by reflux may be a useful strategy for preventing DNA damage and decreasing the risk for tumor formation caused by GERD, they concluded.

More information: Vikas Bhardwaj et al. Activation of NADPH oxidases leads to DNA damage in esophageal cells, *Scientific Reports* (2017). [DOI: 10.1038/s41598-017-09620-4](https://doi.org/10.1038/s41598-017-09620-4)

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