

Common medication hindering lung cancer treatment

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A common medication used to treat reflux, heart burn and ulcers could lessen the effectiveness of lung cancer immunotherapy drugs, according to new Flinders University research.

Published in Nature's *British Journal of Cancer*, the study investigated the impact of proton pump inhibitors (PPIs) on patients undergoing

treatment for non-[small-cell lung cancer](#), the most common type of lung cancer, accounting for 85 percent of cases.

Patients received either chemotherapy or were treated with a combination of chemotherapy and atezolizumab, an immune checkpoint inhibitor drug, designed to boost the [immune system](#) into killing [cancer cells](#).

The researchers found PPI use was associated with worse survival in patients with advanced cancer treated with atezolizumab plus chemotherapy, but not in those that received chemotherapy alone, with the study showing PPI use was linked to a [significant decrease](#) in the benefit of the immune therapy treatment.

Lead author Dr. Ash Hopkins from the Flinders Health and Medical Research Institute says it's important the impacts of PPIs are well understood.

"Stomach issues and reflux are common in cancer patients so the use of antacids and PPIs is common. Approximately 30 percent of cancer patients use them, and usually for extended periods of time," says Dr. Hopkins, a NHMRC Investigator Fellow and leader of the Clinical Cancer Epidemiology Lab at Flinders University.

"Of concern is that the medication is often overused, or used inappropriately, as it is seen to cause little harm, however our research could indicate a need to change this approach."

PPIs treat a number of stomach issues by reducing acid production in the wall of the stomach, with types and brands including esomeprazole (Nexium, Dexilant), lansoprazole (Zoton, Zopral), omeprazole (Losec, Maxor), pantoprazole (Somac, Ozpan) and rabeprazole (Parbezol, Pariet).

Recent studies have shown the medication can cause significant gut microbiota changes, which could lead to its impact on cancer immunotherapy.

"Immune checkpoint inhibitor (ICI) drugs help the immune system by switching on T-cells, allowing them to kill or control cancerous tumors, but the gut microbiota also plays an important role in regulating our body and its immune function," says Dr. Hopkins.

"When this gut microbiota is impacted it can stop the ability of ICIs to activate the immune system, meaning the drugs simply won't work as well to fight off the cancer."

While further studies are needed, the researchers say it could be time for oncologists to reconsider indiscriminate use of PPIs for their patients.

"With increasing evidence this impact is seen across different cancer types, as well as the growing use of PPIs around the world, there is an urgent need to conclusively determine how PPIs are affecting [cancer](#) treatment, but the signs are certainly there," says Dr. Hopkins.

More information: Ashley M. Hopkins et al, Efficacy of first-line atezolizumab combination therapy in patients with non-small cell lung cancer receiving proton pump inhibitors: post hoc analysis of IMpower150, *British Journal of Cancer* (2021). [DOI: 10.1038/s41416-021-01606-4](https://doi.org/10.1038/s41416-021-01606-4)

Provided by Flinders University

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