

Acetaminophen may be less heart-safe than previously thought

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The common painkiller acetaminophen was found to alter proteins in the heart tissue when used regularly at moderate doses, according to a new study conducted in mice. Researchers presented their work at the [American Physiology Summit](#), the flagship annual meeting of the American Physiological Society (APS), in Long Beach, California, held April 4–7.

"We found that regular use of acetaminophen at concentrations that are considered safe—equivalent to 500 mg/day—causes numerous signaling pathways inside the heart to be altered," said Gabriela Rivera, the study's first author and a doctoral student working in the laboratory of Aldrin Gomes, Ph.D., at the University of California, Davis. "These results prompt me to consider using acetaminophen at the lowest effective dose and for the shortest duration possible."

Acetaminophen, the [active ingredient](#) in Tylenol and many other pain medications, is generally thought to carry a low risk of harmful side effects when used as directed. It is often recommended over non-steroidal anti-inflammatory medications (NSAIDs) such as ibuprofen for people with [high blood pressure](#) or [heart disease](#).

In the past, studies examining the possible effects of acetaminophen on the heart have resulted in mixed findings. However, Rivera says that previous research has consistently suggested that using acetaminophen regularly at high doses is more likely to cause heart problems than using it only occasionally and at lower doses.

Looking at the levels of various proteins in tissues is a common way scientists assess how well the body is carrying out its normal functions. Using [mice](#), Rivera and colleagues in the Gomes lab studied how acetaminophen affects the balance of proteins in the heart. They gave

some mice plain water, while others were given water containing an amount of acetaminophen equivalent to 500 mg (the amount contained in one tablet of extra-strength Tylenol) per day in an adult human.

After seven days, the mice given acetaminophen showed significant changes in the levels of proteins associated with biochemical pathways involved in a range of functions, such as [energy production](#), antioxidant usage and the breakdown of damaged proteins.

"We expected two to three pathways to be altered, but we found over 20 different signaling pathways being affected," Rivera said.

The results suggest that long-term medium- to high-dose acetaminophen use could cause heart issues as a result of oxidative stress or the buildup of toxins that are produced as acetaminophen breaks down, Rivera said. While our bodies can usually clear such toxins before they cause damage, it may be harder for the body to keep up when medium- to high- doses are taken consistently over time.

One caveat is that the research was done in mice and cannot necessarily be extrapolated to humans, Rivera noted. Researchers suggested aiming to limit acetaminophen use to a few days at a stretch and discussing any concerns regarding high-dose acetaminophen use with a person's health care provider.

Provided by American Physiological Society

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