

Possible new mechanism for aspirin's role in cancer prevention

November 19 2015



Coated aspirin tablets. Image: Wikimedia Commons.

Aspirin has been shown to decrease the risk of colorectal cancer and possibly other cancers. However, the risk of side effects, including in some cases severe gastrointestinal bleeding, makes it necessary to better understand the mechanisms by which aspirin acts at low doses before recommending it more generally as a preventative, says Cornelia Ulrich, PhD, Senior Director of Population Sciences at Huntsman Cancer Institute in Salt Lake City.

"In the long run we want to personalize prevention with [aspirin](#) because like everything it can have side effects. We want to be able to tailor it to people who are most likely to have benefit and to have the lowest risk of adverse outcomes."

In a study published in the journal of *Cancer Epidemiology, Biomarkers,*

and Prevention, Ulrich and her collaborators used a new technique, metabolite profiling, to identify a [biochemical pathway](#) previously unknown to be regulated by aspirin. Specifically, the researchers found that aspirin substantially decreases the level of a chemical called 2-hydroxyglutarate in the blood of healthy volunteers and in two [colorectal cancer](#) cell lines. This chemical, 2-hydroxyglutarate, is considered a driver of cancer development (known as an oncometabolite) because elevated levels have been found in certain cancers of the blood and brain and several groups are currently studying it as a molecule that promotes tumor formation.

Ulrich says the study adds to the overall evidence that aspirin is important for cancer prevention and points to a new pathway that deserves further study in the context of aspirin. "It is really exciting that aspirin, which can work in colorectal cancer prevention, is now linked to a new pathway that has shown to be relevant for cancer formation."

The first part of the study involved looking comprehensively at the metabolic profiles from the blood of 40 individuals who had taken aspirin for 60 days. The design was rigorous, with participants each having a phase with and without aspirin. More than 360 metabolites, or small molecule chemicals such as sugars, amino acids, and vitamins, were analyzed, says Ulrich. "This study covered most of the known biochemical pathways in the body."

The researchers found aspirin metabolites were increased in the volunteers as expected (p

Citation: Possible new mechanism for aspirin's role in cancer prevention (2015, November 19) retrieved 25 April 2024 from <https://medicalxpress.com/news/2015-11-mechanism-aspirin-role-cancer.html>

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