New clues to how humble painkiller stifles cancer growth

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(PhysOrg.com) -- One of our scientists has shed light on how a common class of painkillers – which includes ibuprofen – may interact with a key protein that fuels the growth of many different types of cancer, according to a study published in the journal *Chemical Communications* this week.

Ibuprofen is one of several 'profens' – a particular group of non-steroidal

anti-inflammatory drugs (NSAIDs) – being investigated for their ability to prevent cancer.

Our research team, from the Department of Pharmacy & Pharmacology, carried out an analysis of drugs in the same class as ibuprofen and discovered that they are all processed by the body in exactly the same way – through a protein called AMACR, which converts the drug into its active form.

AMACR is overactive in almost all prostate cancers, some bowel cancers and several other types of cancer and is thought to fuel the growth of the disease by boosting the cell's energy supply.

So understanding how drugs like ibuprofen might alter AMACR activity could help scientists better understand how they are able to block cancer growth.

Lead author Dr Matthew Lloyd, said: "Our study is the first to test other drugs in the same family as ibuprofen systematically and show that they're all processed by the same protein in the body. Some early laboratory studies have suggested that high doses of ibuprofen can halt the growth of prostate cancer cells, but the reasons for this aren't well understood.

"Understanding more about how this protein is acting in cells and what molecules it interacts with could provide important clues to how this process works, hopefully opening up new avenues of research for treating prostate cancer in the future."

Dr Julie Sharp, senior science information manager at Cancer Research UK, said: "This research is part of an international effort to understand how drugs like ibuprofen could prevent, or slow down, the development of cancer. But there are risks as well as benefits and long term use of

these drugs can have side effects, such as bleeding and stomach ulcers. Understanding more about how these drugs work on a molecular level is a crucial step in being able to develop better targeted drugs with fewer side effects in future."

For the full paper please see: Chiral inversion of 2-arylpropionyl-CoA esters by human α-methylacyl-CoA racemase 1A (P504S)—a potential mechanism for the anti-cancer effects of ibuprofen.

Provided by University of Bath