Why ibuprofen may stop cancers from developing

September 26 2013

New study highlights why Ibuprofen might stop certain cancers from developing.

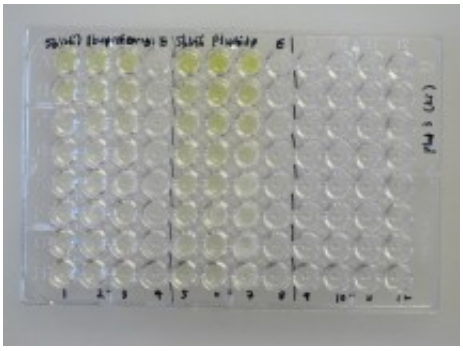
(Medical Xpress)—Latest research by scientists in our Department of Pharmacy & Pharmacology has shown why the anti-inflammatory drug ibuprofen might stop certain cancers from developing.

Ibuprofen – a member of the family of drugs known as NSAIDs – is one of the most commonly taken non-prescription drugs alongside paracetamol and aspirin and there is evidence to suggest that long-term users could be better protected against prostate cancer, some colon cancers and several other cancers as well.

Unlike many drugs ibuprofen can exist in two different forms, known as

R- and S-. Only the S-form has anti-inflammatory properties whilst the R-form is inactive. However the body can convert R-ibuprofen into S-ibuprofen through a process known as chiral inversion – something scientists believe may have knock-on benefits in fighting cancer.

This is because the enzyme that performs chiral inversion, alpha-methylacyl-CoA racemase (AMACR), has increased levels in prostate cancer, some colon cancers and several other cancers as well. This latest research hypothesises that the body's processing of the drug in fact reduces the normal activity of the enzyme, which in turn could stop the cancer from developing.



Ibuprofen and another profen drug derivative tested with the enzyme. The yellow colour means that the enzyme is able to convert the derivative to the drug itself.

The academic team involved in this latest paper include Dr Matthew Lloyd, Dr Tim Woodman, Dr Andrew Thompson and Professor Mike Threadgill. Commenting on the findings, Dr Lloyd said: "The chiral inversion behaviour of ibuprofen in humans has been known since at least the 1970s. However, it is not until now that the specific proteins that perform the various steps have been identified.

"This study focusses on the final enzyme that produces active ibuprofen, which fights cancer by targeting cyclooxygenase (COX) enzymes. It will also help us understand how ibuprofen fights cancer by targeting AMACR."

He added: "A particularly pleasing aspect of the study was the contribution made by the student members of the team."

More information: www.sciencedirect.com/science/ … ii/S0006295213005765

Provided by University of Bath