

Commonly used ulcer drugs may offer treatment potential in Alzheimer's disease

April 22 2009

In a new study, published in the May issue of Elsevier's *Experimental Neurology*, scientists at the University of British Columbia have discovered that drugs commonly used to treat ulcers have significant neuroprotective properties, which appear to be enhanced when used in combination with ibuprofen, a widely used anti-inflammatory drug.

"Our results show that [proton pump](#) inhibitors are also antiinflammatory agents. They open up an entirely new application for these drugs" said Dr. Sadayuki Hashioka, first author on the paper.

Proton pump inhibitors include lansoprazole and omeprazole. They are remarkably safe drugs which have so far been used only to treat ulcers and other conditions where there is excess gastric acidity. These include *Helicobacter pylori* infections and side effects from treatment with NSAIDs such as ibuprofen. The finding that they also have anti-inflammatory potential opens up the possibility of using these drugs in a variety of inflammatory conditions where NSAIDs are now used. There would be the double effect of protection from gastrointestinal side effects plus enhanced antiinflammatory activity.

The researchers found that when human [microglia](#), or human monocytic THP-1 cells, were exposed in vitro to the proton pump inhibitors, their secretions became less toxic towards human neuroblastoma cells. In addition, they found that these drugs acted synergistically with ibuprofen, a very widely used antiinflammatory agent. To confirm that the proton pump inhibitors were acting to inhibit inflammation, they

found that lansoprazole and omeprazole reduced the secretion from THP-1 cells of the inflammatory cytokine tumor necrosis factor alpha.

Dr. Patrick McGeer, senior investigator on the UBC team, commented "Many epidemiological studies have revealed that individuals on long term treatment with ibuprofen are relatively spared from Alzheimer disease. Our investigation indicates that individuals taking lansoprezole or omeprazole in addition to ibuprofen might be getting even greater protection. It also suggests that a clinical trial of a combination of ibuprofen and a proton pump inhibitor might be effective for those already suffering from Alzheimer disease".

Epidemiological studies might show a sparing effect of Alzheimer disease through the use of proton pump inhibitors alone".

More information: The full article is "Proton pump inhibitors exert anti-inflammatory effects and decrease human microglial and monocytic THP-1 cell neurotoxicity", Experimental Neurology, Volume 217, Issue 1, pp. 177-183, available online 16 April 2009. Sadayuki Hashioka, Andis Klegeris, Patrick L. McGeer
doi:10.1016/j.expneurol.2009.02.002, www.elsevier.com/locate/yexnr

Source: Elsevier

Citation: Commonly used ulcer drugs may offer treatment potential in Alzheimer's disease (2009, April 22) retrieved 12 July 2023 from <https://medicalxpress.com/news/2009-04-commonly-ulcer-drugs-treatment-potential.html>

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