

New era of pain drugs advanced by Barrow researcher

February 9 2010

Research led by a scientist at Barrow Neurological Institute at St. Joseph's Hospital and Medical Center has opened the door for the advancement of a new category of painkillers, called TRPV1 antagonists.

These drugs block the transient receptor potential vanilloid-1 (TRPV1) channel, which is the same receptor responsible for the sensation of hotness from hot peppers. However, clinical trials have revealed that TRPV1 antagonists cause hyperthermia-- a dangerous, fever-like rise in body temperature.

Research has shown that TRPV1 can be activated by several stimuli, including "pepper-like" chemicals, high temperatures and protons. The same channel is responsible for pain caused by these diverse stimuli. For a number of years scientists have focused on the development of TRPV1 antagonists, but have been stymied by the dangerous hyperthermia side effect.

The groundbreaking project to eliminate the side effect was led by Andrej A. Romanovsky, MD, PhD, at Barrow and included researchers from Amgen and Arizona State University. Their findings, published last month in the *Journal of Neuroscience*, show the side effect can be avoided.

"We think we have found a recipe for making TRPV1 antagonists that do not have this fever-like side effect," says Dr. Romanovsky. "If an

antagonist does not block activation of the TRPV1 channel by protons, it does not cause hyperthermia." This research suggests that drugs that are being developed should be designed not to block the proton activation of TRPV1.

Even though pain is a major clinical problem and the search for new painkillers has been conducted by [pharmaceutical companies](#) and academic scientists for many years, the TRPV1 channel is one of the very few novel targets for pain identified so far. To continue developing TRPV1 antagonists, it was necessary to find a way to eliminate their hyperthermic side effect. "And, this is exactly what our study did," Dr. Romanovsky said.

Scientists believe that this new generation of painkillers will be effective in treating [pain](#) related to a number of conditions including cancer, AIDS, migraines and diabetes.

Provided by St. Joseph's Hospital and Medical Center

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