

Study uncovers anticonvulsant effects of valproic acid

14 September 2015, by Tom Vasich

University of California, Irvine researchers with the School of Medicine have identified the mechanism by which valproic acid controls epileptic seizures, and by doing so, also revealed an underlying factor of seizures.

Valproic acid is widely used to treat various types of [seizure disorders](#), but to this point, the [cellular mechanism](#) affected by its anticonvulsant properties were not well understood.

Dr. Naoto Hoshi, an associate professor of [pharmacology](#) and physiology & biophysics, and colleagues discovered that valproic acid preserved the M-current during seizures. The M-current is mediated through cellular potassium channels and is important for the proper firing of neuronal signals.

The UCI team also uncovered that during seizures, the M-current is suppressed, which contributes to neuronal hyperexcitability. This underlying factor, Hoshi said, contributes to our understanding of seizures and points to the creation of new, more effective drugs that carry fewer side effects.

Valproic acid is also used to treat manic episodes related to bipolar disorder (manic depression) and to prevent migraine headaches, but the drug is linked to liver damage, birth defects and psychiatric side-effects.

Hee Yeon Kay, Derek Green, Seungwoo Kang and Anastasia Kosenko with UCI contributed to study, which appears in the *Journal of Clinical Investigation*. The National Institute of Neurological Disorders and Stroke (grant R01 NS067288) supported the research.

Provided by University of California, Irvine

APA citation: Study uncovers anticonvulsant effects of valproic acid (2015, September 14) retrieved 10 September 2022 from <https://medicalxpress.com/news/2015-09-uncovers-anticonvulsant-effects-valproic-acid.html>

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