

New direction for epilepsy treatment

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If common anticonvulsant drugs fail to manage epileptic seizures, then perhaps the anti-inflammatory route is the way to go. That's according to Mattia Maroso and colleagues from the Mario Negri Institute for Pharmacological Research in Milan, Italy, who found that giving mice repeated doses of a specific enzyme inhibitor significantly reduced both chronic epileptic activity and acute seizures. Their findings, published online in the Springer journal *Neurotherapeutics*, open up the possibility of a new target system for anticonvulsant drug intervention, to control epileptic activity that does not respond to certain anticonvulsant treatments.

An enzyme known as ICE/Caspase-1 is involved in [epileptic seizures](#); it induces inflammatory processes by producing IL-1beta, a pro-inflammatory molecule, in [brain regions](#) where [epileptic activity](#) originates and spreads. Mattia Maroso and colleagues looked at the elective inhibitor for this enzyme, in a mouse model of acute seizures and in mice with chronic epilepsy showing spontaneous recurrent epileptic activity.

The researchers artificially induced chronic epileptic seizures in 21 adult male mice and acute seizures in 46 mice. They then injected them with the enzyme inhibitor (VX-765) and recorded the resulting epileptic activity in brains of the mice.

They found that the enzyme inhibitor had powerful anticonvulsant effects. Repeated systemic administration reduced chronic epileptic activity in mice in a dose-dependent manner, and the effect was

reversible after four days of treatment when the drug regime was discontinued. The same dose regimen also reduced acute seizures in the mice.

The authors conclude: "Our results support a new target system for anticonvulsant drug intervention. Our findings open new perspectives for the clinical use of this anti-inflammatory strategy for treating established drug-resistant epileptic conditions."

More information: Reference Maroso M et al (2011). Interleukin-1 β Biosynthesis Inhibition Reduces Acute Seizures and Drug Resistant Chronic Epileptic Activity in Mice. *Neurotherapeutics* [DOI 10.1007/s13311-011-0039-z](https://doi.org/10.1007/s13311-011-0039-z)

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