

Brain's cannabinoid system fights seizures

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A German-led study shows the brain area that responds to the active chemical in marijuana also provides central "on-demand" protection against seizures.

Beat Lutz and Giovanni Marsicano of the Max Planck Institute of Psychiatry in Munich and Johannes Gutenberg University in Mainz say their discoveries suggest the "endocannabinoid" system might constitute a prime target for drugs against seizures of epilepsy and other neurodegenerative diseases.

The endocannabinoid system, which includes the receptors, the natural cannabinoid compounds that trigger them, as well as the machinery for regulating the process, was known to modulate the excitation of neuronal transmission, noted the researchers. However, it had not been established that such modulation might affect neurons in the hippocampus responsible for the "excitotoxicity" that underlies the uncontrolled activity of seizures.

The researchers say their experiments prove endocannabinoid receptors are also present in the same glutamatergic neurons in areas of the hippocampus known to be central to seizure generation. The scientists say that finding "represents a novel step in understanding the progression of acute excitotoxic seizures and the development of epileptic states."

The study appears in the current issue of the journal *Neuron*.

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