

Brain study uncovers vital clue in bid to beat epilepsy

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People with epilepsy could be helped by new research into the way a key molecule controls brain activity during a seizure.

Researchers have identified the role played by of a protein – called BDNF – and say the discovery could lead to new drugs that calm the symptoms of epileptic seizures.

Scientists analysed the way cells communicate when the brain is most active – such as in [epileptic seizures](#) – when electrical signalling by the brain's neurons is increased.

They found that the BDNF molecule – which is known to be released in the brain during seizures – blocks a specific process known as activity-dependent bulk endocytosis (ADBE).

By blocking this process during an epileptic seizure, BDNF increases the release of neurotransmitters and causes heightened electrical activity in the brain.

Since ADBE is only triggered during high [brain activity](#), drugs designed to target this process could have fewer side effects for normal day to day brain function, researchers say.

Experts say that not all [epilepsy patients](#) respond to current drug treatments and the finding could lead to the development of [new medicines](#).

The team, however, offered a word of caution. Since ABDE is also implicated in a range of brain functions, such as creating [new memories](#), more research is needed to establish what the effects of manipulating this molecule might be on these key processes.

The study, led by the University of Edinburgh, is published in the journal *Nature Communications*. The research was funded by the Wellcome Trust and the Medical Research Council.

Dr Mike Cousin, of the University of Edinburgh's Centre for Integrative Physiology, who led the research, said: "Around one third of people with epilepsy do not respond to the treatments we currently have available. By studying the way [brain cells](#) behave during seizures, we have been able to uncover an exciting new research avenue for research into anti-epileptic therapies."

Researchers will now focus on identifying specific genes that control this brain process to determine whether they hold the key to new drug treatments.

Provided by University of Edinburgh

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