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New drugs show promise for preventing 'absence seizures' in children

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A team led by a University of British Columbia professor has developed a new class of drugs that completely suppress absence seizures – a brief, sudden loss of consciousness – in rats, and which are now being tested in humans.

Absence seizures, also known as "petit mal seizures," are a symptom of epilepsy, most commonly experienced by children. During such episodes, the person looks awake but dazed. The seizures, arising from a flurry of high-frequency signals put out by the neurons of the thalamus, can be dangerous if they occur while a person is swimming or driving, and can also interrupt learning.

Available medications don't completely control such seizures in many patients. They also cause severe side effects, including sleepiness, blurred vision and diminished motor control.

A Canadian-Australian team, led by neuroscientist Terrance P. Snutch, a Canada Research Chair in the Michael Smith Laboratories at UBC, developed new drugs with a different target – the flow of calcium into brain cells. Their findings were published today in *Science Translational Medicine*.

The new drugs, known as Z941 and Z944, block the flow of calcium ions into those neurons. When given to rats with absence epilepsy, they suppressed seizures by 85 to 90 per cent.

The team, which included collaborators at Zalicus Pharmaceuticals Ltd. of Vancouver and the University of Melbourne, was surprised to find that when seizures did occur, they were also of shorter duration; existing medications don't have any effect on the length of seizures.

The first phase of human clinical trials of Z944 began in December, with results expected later this year.

"Z941 and Z944 were designed to target a specific type of nerve cell calcium channel associated with epilepsy, as well as other hyper-excitability disorders such as chronic pain," says Snutch, a professor in the departments of psychiatry and zoology. "The dramatic effect of the drugs in rats with absence epilepsy, together with the drugs' ability to be administered orally and easily absorbed, and its good safety profile in animals, provide us with cautious optimism for the current clinical trial."

Provided by University of British Columbia

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