

Pot shot: Scientists find cannabis trigger for forgetfulness

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A young man smokes cannabis in Santiago. Researchers said they had pinpointed the biochemical pathway by which cannabis causes memory loss in mice.

Researchers on Sunday said they had pinpointed the biochemical pathway by which cannabis causes memory loss in mice.

The discovery could help open the way to drugs that have marijuana's desired pain-killing properties but without its amnesic side effects, according to the paper, published in the journal [Nature Neuroscience](#).

It has long been known that cannabis produces memory loss by acting on the hippocampus, the region in the brain that governs most of our

cognitive functions.

But whether that impact was long-term or lasted only during the drug's use, as well as how the drug acted biochemically, has been intensely debated.

Rafael Maldonado and and Andres Ozaita at Pompeu Fabra University in Barcelona believe they can help answer both questions.

The scientists first created a new measure of [cognitive impairment](#) so that they could easily assess the impact of cannabis use on memory in normal mice.

Marijuana's active ingredient, THC, acts on cannabinoid receptor neurons called CB1. While found in several locations within the brain, there are two concentrations of CB1-type cells in the [hippocampus](#).

To explore how each of these neural networks might affect [memory loss](#), the researchers created two groups of genetically modified mice, each missing the CB1 receptors in either of the two regions.

The rodents were then injected with doses of THC equivalent to "heavy use" of marijuana in humans.

One of the groups reacted in the well-known forgetful fashion when required to do memory tests.

The other mouse group -- whose CB1 had been removed from the so-called GABAergic neurons -- was unaffected by the drug.

"Not only were the behavioural effects abolished, the biochemical responses that are directly responsible for the amnesic-like effect were abolished too," Maldonado said in a phone interview.

This should make it possible to develop a molecule that will produce cannabis' positive effect without affecting the GABAergic [brain cells](#) that govern memory, he said by phone.

The research also showed that administering cannabis leads to a change in the way that proteins are manufactured in the affected part of the brain.

"This is crucial, because a change in protein synthesis means a long-term change, this is not something that will just disappear the next day," he said.

Just how long memory might be degraded is unknown, he added.

"These are not permanent changes, even if they are long-term. People who are using [cannabis](#) therapeutically should not be worried," he said.

Maldonado refused to give an opinion about the impact for recreational users of marijuana, though.

Despite its ambiguous legal status, marijuana is used in several countries, especially the United States, as an analgesic for patients with cancer, glaucoma, HIV/AIDS and other conditions causing pain or discomfort.

Unlike illegal marijuana, so-called medical [marijuana](#) comes from an identified source in which levels of THC are known and monitored.

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