

Latest Buzz: Marijuana May Slow Progression Of Alzheimer's Disease

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New evidence in rats suggests that marijuana may contain compounds that slow the memory loss associated with Alzheimer's disease.

Marijuana has strong anti-inflammatory effects, and many researchers believe that there is a compelling link between chronic inflammation and the progression of Alzheimer's, said Gary Wenk, a study co-author and a professor of psychology at Ohio State University.

“Inflammation in the brain is part of aging,” Wenk said. “It happens to almost all of us as we age. But in some cases, this inflammation gets out of hand and causes serious damage.”

Treatment with a synthetic compound similar to marijuana reduced inflammation in older rats in addition to making the animals “smarter,” said Wenk, who is also a professor of neuroscience and molecular virology, immunology and medical genetics.

“The compound substantially improved the memories of the older rats,” he said. “These animals were able to hold on to key details of a specific task. Untreated older rats, on the other hand, were not.”

The researchers presented their findings October 18 in Atlanta at the annual Society for Neuroscience meeting.

Evidence suggests that people who regularly smoked marijuana in the 1960s and 1970s rarely develop Alzheimer's disease, said Wenk, adding that researchers are eager to develop a drug with the anti-inflammatory

properties of marijuana, but without the drug's psychoactive effects.

The colleagues treated young and old rats with WIN-55212-2 (WIN), a synthetic drug similar to marijuana. While the compound improved memory and helped to control inflammation, it is not a candidate for use in humans because it still contains substances that could trigger a high.

“We don't use marijuana in our experiments because we're trying to find a compound that isn't psychoactive,” Wenk said. “And using synthetic compounds may eventually help us to separate the beneficial effects from the psychoactive effects.”

The researchers inserted a small tube into the brain of each rat. The tubes were kept in place for three weeks to allow for periodic infusion of lipopolysaccharide (LPS) a material that stimulates an immune reaction. LPS triggers a reaction that mimics the inflammation found in Alzheimer's patients.

Some of the rats were also treated with WIN daily for those three weeks.

The animals were subjected to a memory test during the third week of treatment. They navigated a water maze that requires finding an escape platform hidden just below the surface of opaque water. The rats were given several opportunities over three days to acclimate to the water maze. On the fourth day, the researchers timed how quickly each rat found the platform.

“The maze task is sensitive to memory impairment and also to aging,” Wenk said. “Old rats tend to be pretty bad at navigating the maze. It's kind of like an elderly person trying to find his way around a house that he's not familiar with.

Once the testing was complete, the researchers began to examine the

animals' brains for signs of inflammation – they looked for certain kinds of immune cells that are typically found in large quantities in the brains of former Alzheimer's patients.

They found that the marijuana-like compound decreased inflammation in the brains of young and old rats, and that the treated animals in both age groups could find the platform in the water faster than the non-treated animals.

But the most noticeable difference was between the treated and non-treated older rats.

“The compound significantly improved the older rats' memories,” Wenk said. “They found the platform faster, suggesting that they were less apt to forget key information for this task. It's a pretty good prediction of how a human would respond to this drug.”

Younger rats treated with the compound found the escape platform faster than non-treated younger rats did. However, the difference wasn't as remarkable as that of the older group, possibly due to the lack of age-related changes in the brains of the younger rats.

“Older rats have impaired spatial memory, due to the effect of aging on the brain,” Wenk said.

Wenk conducted this work with Ohio State colleagues Yannick Marchalant and Francesca Cerbai, both postdoctoral researchers in psychology, and Holly Brothers, a graduate student in psychology.

Source: Ohio State University

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