Marijuana compounds may act without causing a high

By Jacqueline Stenson

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SAN DIEGO (Reuters Health) - Certain compounds in marijuana may help stifle an overactive immune-system response that can worsen multiple sclerosis and other neurodegenerative conditions without causing the drug's high, preliminary study findings suggest.

"These are the compounds of the plant that are very exciting," said study author Dr. Cecilia Hillard, an associate professor of pharmacology at the Medical College of Wisconsin in Milwaukee.

Hillard and colleagues studied rat microglia cells, which are immune cells in the brain. When the brain or spinal cord experiences an infection or sustains an injury, these cells flock to the affected area to mop up debris from dead tissue. However, they also can cause the death of nerve cells by prompting excessive inflammation.

"Microglia are like a two-edged sword," Hillard said. "When they're overactive, they make a whole bunch of nasty things that wind up killing cells like neurons."

Doctors are seeking ways to curb this immune-system response, which can also worsen stroke, Alzheimer's disease and AIDS-related dementia.

Marijuana is believed to help and some patients smoke it for this purpose. But the problem is that the drug has mind-altering effects and can weaken immunity, which could pose a risk to AIDS patients and others who already have impaired immune systems.

Marijuana's actions are widely credited to its most well-known ingredient, tetrahydrocannabinol (THC).

In the new study, the researchers found that THC and two other compounds, CBD and CBN, markedly inhibited the proliferation of rat microglia cells in the lab.

But unlike THC, CBD and CBN do not bind to certain cellular receptors that are known to cause the unwanted side effects, Hillard reported Sunday at the annual Experimental Biology meeting.
The findings raise the possibility that doctors may one day give patients these isolated compounds to help ease neurodegenerative conditions involving overactive microglia, but much more research is needed first, she said.

"These chemicals would presumably slow down this overactive process, so if you could treat a person with this overactive system, you might be able to reduce the neurotoxicity," Hillard said.

"Doctors need to know that cannabinoids that come from marijuana are going to have effects on immune cells," Hillard said. And they should warn patients with compromised immune systems that smoking marijuana for medicinal purposes may impair immune function, she said.