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mr-10-015

MEDIA RELEASE | FEBRUARY 8, 2010

Marijuana ineffective as an Alzheimer's treatment: UBC-Vancouver Coastal Health research

The benefits of marijuana in tempering or reversing the effects of Alzheimer's disease have been challenged in a new study by researchers at the University of British Columbia and Vancouver Coastal Health Research Institute.

The findings, published in the current issue of the journal *Current Alzheimer Research*, could lower expectations about the benefits of medical marijuana in combating various cognitive diseases and help redirect future research to more promising therapeutics.

Previous studies using animal models showed that HU210, a synthetic form of the compounds found in marijuana, reduced the toxicity of plaques and promoted the growth of new neurons. Those studies used rats carrying amyloid protein, the toxin that forms plaques in the brains of Alzheimer's victims.

The new study, led by Dr. Weihong Song, Canada Research Chair in Alzheimer's Disease and a professor of psychiatry in the UBC Faculty of Medicine, was the first to test those findings using mice carrying human genetic mutations that cause Alzheimer's disease – widely considered to be a more accurate model for the disease in humans.

“As scientists, we begin every study hoping to be able to confirm beneficial effects of potential therapies, and we hoped to confirm this for the use of medical marijuana in treating Alzheimer's disease,” says Song, a member of the Brain Research Centre at UBC and VCH Research Institute and Director of Townsend Family Laboratories at UBC.

“But we didn't see any benefit at all. Instead, our study pointed to some detrimental effects.”

Over a period of several weeks, some of the Alzheimer's-afflicted mice were given varying doses of HU210 – also known as cannabinoids – which is 100 to 800 times more potent than the marijuana compounds. Their memory was then tested.

The mice treated with HU210 did no better than untreated mice, with those given low doses of HU210 performing the worst. The researchers also found that HU210-treated mice had just as much plaque formation and the same density of neurons as the control group. The group given higher doses actually had fewer brain cells.



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“Our study shows that HU210 has no biological or behavioural effect on the established Alzheimer’s disease model,” says Song, the Jack Brown and Family Professor and Chair in Alzheimer’s Disease. “More studies should be done before we place much hope in marijuana’s benefits for Alzheimer’s patients.”

Alzheimer’s disease is a neurodegenerative disorder characterized by progressive cognitive deterioration and is the most common form of dementia.

The Alzheimer Society of Canada estimates that the disease affects close to 300,000 Canadians and accounts for two-thirds of all cases of dementia. Approximately \$5.5 billion per year is spent caring for persons with Alzheimer’s and related dementias in Canada. By 2031, about 750,000 Canadians will suffer from Alzheimer’s and related dementias.

The Alzheimer’s Association in the U.S. estimates there are approximately 500,000 Americans younger than 65 with Alzheimer’s or other dementia.

The research was supported by the Canadian Institutes of Health Research, the Jack Brown and Family Alzheimer’s Research Foundation, the Michael Smith Foundation for Health Research and a donation from the David Townsend Family.

Townsend Family Laboratories was established at The University of British Columbia with a donation of \$7.5 million from the David Townsend Family. The research centre is dedicated to integrating the basic and clinical research for finding the underlying mechanism and novel diagnostic biomarkers for Alzheimer’s Disease and developing interventions to prevent and treat this devastating disease.

The UBC Faculty of Medicine provides innovative programs in the health and life sciences, teaching students at the undergraduate, graduate and postgraduate levels, and generates more than \$200 million in research funding each year. In 2007/08, out of the total UBC research endeavour, 53 per cent, or \$247 million, came from academic and clinical teams in the Faculty of Medicine. For more information, visit www.med.ubc.ca.

The Brain Research Centre comprises more than 200 investigators with multidisciplinary expertise in neuroscience research ranging from the test tube, to the bedside, to industrial spin-offs. The centre is a partnership of UBC and VCH Research Institute. For more information, visit www.brain.ubc.ca.

Vancouver Coastal Health Research Institute (VCHRI) is the research body of Vancouver Coastal Health Authority, which includes BC’s largest academic and teaching health sciences centres: VGH, UBC Hospital, and GF Strong Rehabilitation Centre. In academic partnership with the University of British Columbia, VCHRI brings innovation and discovery to patient care, advancing healthier lives in healthy communities across British Columbia, Canada, and beyond. www.vchri.ca.