

Rapamycin rescues learning, memory in Alzheimer's mouse model

February 24 2010



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Rapamycin, a drug that keeps the immune system from attacking transplanted organs, may have another exciting use: fighting Alzheimer's disease.

Rapamycin rescued [learning](#) and [memory](#) deficits in a mouse model of Alzheimer's, a team from The University of Texas Health Science Center at San Antonio reported Tuesday (Feb. 23).

The study, in the [Journal of Biological Chemistry](#), offers the first evidence that the drug is able to reverse Alzheimer's-like deficits in an animal model, said the senior author, Salvatore Oddo, Ph.D., assistant professor in the Department of Physiology of the UT Health Science Center San Antonio.

Tissue evidence

Rapamycin also reduced lesions in the brains of the mice, the team found. The lesions are similar to those seen in the brains of people who died with Alzheimer's.

"Our findings may have a profound clinical implication," said Dr. Oddo, who is a member of the university's Barshop Institute for Longevity and Aging Studies. "Because rapamycin is a U.S. Food and Drug Administration-approved drug, a clinical trial using it as an anti-Alzheimer's disease therapy could be started fairly quickly."

Last year three institutions, including the Barshop Institute, announced that rapamycin extended the life span of aged research mice at each of the sites. It was the first pharmacologic intervention shown to extend life in an animal model of aging.

Study method

For 10 weeks the mice that model [Alzheimer's disease](#) were fed chow containing rapamycin. At the start of treatment the mice were 6 months old, roughly the age of young adults, but already exhibited indications of

learning and memory deficits and brain lesions.

At the end of the 10 weeks, the mice were tested in a contraption called the Morris water maze, sort of a miniature swimming pool used to assess learning and memory in rodents. At the end of the behavioral tests, the brains of the mice were analyzed to determine the effects of rapamycin on the lesions that indicate Alzheimer's.

Promise remains to be determined

Rapamycin, a bacterial product first isolated in soil from the island Rapa Nui in the South Pacific, also is being tested in cancer research studies. Rapa Nui is commonly known as Easter Island and is distinguished by ancient monoliths with faces.

"While it remains to be determined whether our results obtained in mice could be translated in people, we are very excited as these findings may lead to a new therapeutic intervention to treat Alzheimer's," Dr. Oddo said.

Provided by University of Texas Health Science Center at San Antonio

Citation: Rapamycin rescues learning, memory in Alzheimer's mouse model (2010, February 24) retrieved 2 May 2024 from

<https://phys.org/news/2010-02-rapamycin-memory-alzheimer-mouse.html>

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