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Development of a safer vaccine for Alzheimer's disease

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A new vaccine protects against memory problems associated with Alzheimer's disease, but without potentially dangerous side effects, a new animal study reports. The research was presented at Neuroscience 2010, the annual meeting of the Society for Neuroscience and the world's largest source of emerging news about brain science and health.

Vaccines against amyloid-beta accumulation in the brain, one of the hallmarks of Alzheimer's disease, have long been considered a promising approach to developing a treatment. But finding a vaccine that is both safe and effective has been challenging. Previous research in mice showed that a vaccine that targets the human version of amyloid-beta reduces learning and memory loss associated with the disease. However, the vaccine caused dangerous autoimmune inflammation of the brain during human clinical trials.

In the current study, researchers at the University of California, Irvine tested a vaccine developed against a non-human protein that had the same shape as amyloid-beta, but a different sequence of amino acid building blocks. The Alzheimer's mice that received the vaccine showed improved performance on memory and other cognitive tests. The vaccine also reduced the clumps of amyloid-beta and tau protein that may be toxic to brain cells.

"This finding is important because it shows that you don't need a human protein to get an immune response that will neutralize the toxic amyloid oligomers associated with Alzheimer's disease," said senior author

Charles Glabe, PhD. Because the protein was not human, Glabe and his colleagues believe it is unlikely to cause the dangerous autoimmune response.

“We’ve demonstrated a promising approach to developing a safe, active vaccine -- and one potentially cheaper and easier to distribute than the manufactured vaccines currently in human trials,” Glabe said.

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