

Vaccine prevents prion disease in mice

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An oral vaccine can prevent mice from developing a brain disease similar to mad cow disease, according to research that will be presented at the American Academy of Neurology's 59th Annual Meeting in Boston, April 28 – May 5, 2007. Prion diseases, which include scrapie, mad cow disease, and chronic wasting disease, are fatal and there is no treatment or cure.

The disease spreads when an animal eats the body parts of other animals contaminated with prions. The disease causes dementia and abnormal limb movements.

Prion is a protein that is also an infectious agent. The proteins are so similar to proteins found normally that the immune system does not fight them off. To develop a vaccine that would stimulate the mice's immune system, researchers attached prion proteins to a genetically modified strain of *Salmonella*.

For the study, the mice were orally vaccinated with a safe, attenuated *Salmonella* strain, which expressed the prion protein. Then they were divided into two groups – those who had high levels of antibodies in their blood and thus responded well to the vaccine and those with low levels of antibodies.

The mice with high levels of antibodies had no symptoms of the disease after 400 days. The mice with low levels of antibodies also had a significant delay in the onset of the disease. It normally takes 120 days for mice that have not been vaccinated to develop the disease.

"These are promising findings," said study author Thomas Wisniewski, MD, of NYU School of Medicine in New York, and a member of the American Academy of Neurology. "We are now in the process of redesigning the vaccine so it can be used on deer and cattle."

Wisniewski said much more work is needed before the vaccine could be considered for humans. "The human version of prion disease usually occurs spontaneously and only rarely because of eating contaminated meat," he said. "But if, for example, a more significant outbreak of chronic wasting disease in deer and elk occurs and if it were transmissible to humans, then we would need a vaccine like this to protect people in hunting areas."

He also noted that a vaccine that decreases the spread of prion disease in animals also reduces the possibility that the disease could infect humans.

Source: American Academy of Neurology

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