APHIS Stakeholders Announcement

Wildlife Services

July 8, 2009

USDA and Private Researchers Investigate Use of Enzyme Decontaminant for Chronic Wasting Disease and Other Transmissible Spongiform Encephalopathies

Researchers from the U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS), in partnership with the private company Prion Tech, have released results from a study evaluating the ability of specialized enzymes to digest prions. The study titled, *Feasibility of Infectious Prion Digestion Using Mild Conditions and Commercial Subtilisin*, is available online from the *Journal of Virological Methods.*

Prions are generally believed to be the infectious agents of transmissible spongiform encephalopathies, like chronic wasting disease (CWD), bovine spongiform encephalopathy, Creutzfeldt–Jakob disease and scrapie. Researchers at USDA's National Wildlife Research Center (NWRC) used a mouse-adapted scrapie model system to establish a 52 percent reduction in prion infectivity. Fifty-seven percent of mice challenged with infectious material that was treated with specialized enzymes selected by Prion Tech survived until the end of the study period.

"This initial effort will lead to additional research to refine and further develop this potentially promising means of decontaminating areas, surfaces, facilities, tools and animal products like skull plates and carcasses that may be infected with transmissible spongiform encephalopathies," notes Dr. Kurt VerCauteren, a research wildlife biologist at the NWRC.

State and federal wildlife management and agricultural agencies—as well as the captive cervid industry and other constituents—need effective methods and techniques for disinfecting contaminated sites and controlling the spread of CWD and other transmissible spongiform encephalopathies.

When an animal is infected with CWD, abnormal proteins accumulate in the central nervous and lymphatic systems causing neurodegeneration and a wasting syndrome that leads to death. Currently, there is no cure for CWD. The enzymatic product being developed by NWRC scientists and their collaborators breaks down prion proteins and renders them harmless. Based upon collaborator interest, future research and development will focus on advancing the technology for use on a variety of surfaces and materials.

CWD has been reported in captive and free-ranging mule deer, white-tailed deer, elk and moose. It has been a devastating disease to the captive elk and deer industry. Over 15,000 captive elk and deer have been killed in the United States and Canada in the past 7–8 years to control CWD. Primarily through liberalized hunting, several thousand free-ranging mule deer, white-tailed deer and elk also have been harvested in attempts to reduce the disease in the wild. Infected animals have been shown to contaminate their environments, which can lead to the infection of others, highlighting the need for a decontaminant for CWD in captive and free-ranging settings.

This study was funded in part by the APHIS' veterinary services program. NWRC is the research arm of USDA's wildlife services program. It is the federal institution devoted to resolving problems caused by the interaction of wild animals and society. The center applies scientific expertise to the development of practical methods to resolve problems and to maintain the quality of the environments shared with wildlife. To learn more about NWRC, visit its Web site at http://www.aphis.usda.gov/wildlife_damage/nwrc/.

Note to Reporters: Stakeholder announcements and other APHIS information are available on the Internet. Go to the APHIS home page at http://www.aphis.usda.gov and click on the "Newsroom" button. For additional information on this topic, contact Gail Keirn at (970) 266-6007 or e-mail: gail.m.keirn@aphis.usda.gov.