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News

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*****Veterinarian finds possible vaccine
for bacterial disease.

DALLAS--"Sniffles" is the first sign of pasteurellosis in rabbits.

Then the common respiratory disease can progress to pneumonia, inner ear infection and skin abscesses. In the genital area it can cause sterility.

In a short time an entire colony of rabbits used for biomedical research can be infected. And results can be disastrous when research dollars and hours are lost. It's not uncommon for a fifteen dollar animal to have several thousand dollars worth of research invested in it.

Veterinarian Dr. Yue-Shoung (Bob) Lu, an assistant professor with the Department of Pathology at The University of Texas Health Science Center at Dallas, has a possible solution. Experimenting with the bacteria Pasteurella multocida that causes the disease, Lu has found a temperature sensitive mutant that can live in the lower temperature of the animal's nasal passages and die at the higher temperature of the lungs. This allows the rabbit to produce antibodies against the bacteria without getting the disease.

By activating the body's immune mechanisms, the mutant acts as a vaccine to spur antibody production and protect the animal from getting the disease.

Criteria for a successful vaccine, says Lu, is that the vaccine won't cause the disease and that it has protective efficacy. "We know that the vaccine does not cause lesions in the animals and does not grow in the visceral organs, particularly the lungs." Now that the first criterion has been satisfied, Lu and his research team are working on the second.

Lu, who received a D.V.M. from National Taiwan University and a Ph.D. in microbiology from Washington State University, explains that a live vaccine is often more effective than a killed one since it can multiply within the animal's body. Also, there may be some protective "immunogens" not produced by bacteria grown only in test tube cultures but are produced in the living animal.

The Dallas scientist says that the principle of using a temperature sensitive mutant has been demonstrated before in influenza virus. His finding is unique in its application to a bacterial disease in animals.

Temperature sensitive vaccines can provide local immunity in a way similar to the local immunity provided by polio vaccine, says Lu. The polio vaccine gets its effectiveness from the fact that it localizes in the gut and will multiply there. Polio virus enters the body through the gut and the vaccine, taken orally to be transported to the proper location, affords the localized protection.

Lu adds that the recent finding would indirectly contribute to medical research by safeguarding valuable laboratory animals. But its principle could be used by medical scientists in developing vaccines for humans.

The veterinarian performed his residency at the University of Michigan Medical School. He is board certified in laboratory animal medicine and in veterinary microbiology.

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