Newcastle disease gets new vaccine

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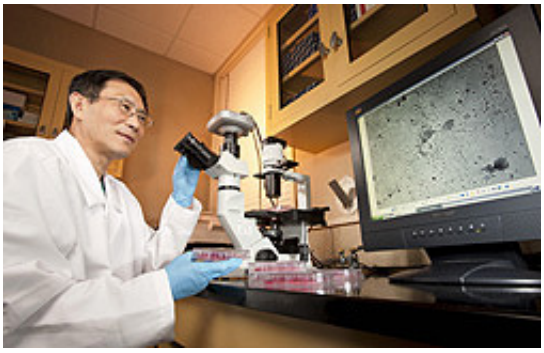

A team of researchers led by ARS microbiologist Qingzhong Yu have developed a new vaccine for Newcastle disease that not only reduces mortality and severity of symptoms in poultry, it also decreases the amount of virus spread.

A new vaccine for Newcastle disease (ND) in poultry has been developed by U.S. Department of Agriculture (USDA) scientists in Athens, Ga. Using reverse genetics technology, the new vaccine is made from part of a virus that is similar to the wild-type Newcastle disease virus (NDV) circulating in the environment today.

Agricultural Research Service (ARS) scientists in the agency's Southeast Poultry Research Laboratory in Athens developed the vaccine, which not only reduces mortality and severity of NDV symptoms in poultry, but also decreases the amount of virus spread as well. ARS is USDA's principal intramural scientific research agency, and the research supports the USDA priority of promoting international food security.

Led by microbiologist Qingzhong Yu, the researchers found that reverse genetics technology enabled them to generate a new vaccine by exchanging a gene from the original vaccine with a similar gene of the current circulating virus. When the new vaccine, containing gene sequences similar to the wild-type virus, was used in vaccination studies, the vaccinated birds were protected from disease and shed less of the wild-type virus after infection.

Current vaccines for Newcastle disease are used widely in commercial poultry and protect the vaccinated birds from disease, but do not stop the virus from being spread from infected to healthy birds. A vaccine that reduces both the shedding of the virus and spreading of viruses among birds is sorely needed by the industry, according to Yu.

Most vaccines used in the United States are formulated with NDV isolated in the 1940s. However, since then new NDV strains have emerged that are genetically different, according to Yu.

NDV causes disease in more than 250 species of birds and typically causes respiratory, gastrointestinal, and/or nervous system symptoms. The most severe form of Newcastle Disease can result in disease and mortality rates exceeding 90 percent in susceptible chickens. The most recent U.S. outbreak, which occurred in 2002-2003 in California, Nevada and Texas, illustrates the devastation and financial cost that can result: More than 3.4 million birds were destroyed, and the cost of controlling the outbreak in California alone was more than $160 million.

More information: Read more about this research in the January 2011 issue of *Agricultural Research* magazine.

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