



TECHNOLOGY

An Improved Avian Influenza Vaccine for New Born Chicks

OVERVIEW

Background

Avian influenza Virus (AIV) outbreaks not only cause the decimation of broiler and egg-laying chicken populations at once but also result a close to 50% increase in the price of poultry meat and eggs, thereby impacting the end consumer as well. Currently, effective vaccines against AIV are not available. AIV outbreaks are controlled by depopulation. Recombinant vector based vaccines against AIV can solve this problem. In a recombinant vector vaccine, the genes coding for the protecting antigens of AIV is inserted into the nucleic acid of a non-pathogenic virus that can replicate within the chicks. The proteins produced from the AI genes sensitize the immune system thereby providing immunity against AIV.

Two significant challenges impede the effectiveness of vectored vaccines: 1) interference from maternally derived antibodies (MDA) against the vector virus (MDA present in newborn chicks can neutralize the vector virus thereby affecting the effectiveness of the vaccine); and 2) route of administration. Current inactivated AIV vaccines in the market are administered by injection, which is costly and time consuming. However, considering the economic impact of an AIV outbreak, a simpler mode of vaccine administration that can be rapid and effective would greatly help producers.

Innovative Technology

Researchers at the University of Maryland have developed a chimeric vectored recombinant vaccine against AIV. The chimeric vector is serologically distinct from wild-type vector, thus circumventing its susceptibility to maternal antibodies. Furthermore, this vaccine not only will enable simple and rapid administration through drinking water but also suitable for in ovo vaccination, a mass vaccination approach in poultry industry. The researchers have tested these vectors in specific pathogen free and broiler chickens and found that the immunized animals survived a challenge with a highly pathogenic AIV with 100% survival rate relative to control group animals.

Applications

- Vaccination against avian influenza in young chicken
- Potential platform vector for other poultry vaccines

Advantages

- Overcomes the interference from maternal antibodies
- Simple and rapid mode of administration that is economical to poultry farmers

CONTACT INFO

UM Ventures
0134 Lee Building
7809 Regents Drive
College Park, MD 20742
Email: umdtechtransfer@umd.edu
Phone: (301) 405-3947 | Fax: (301) 314-9502

Additional Information

INSTITUTION

University of Maryland, College Park

EXTERNAL RESOURCES

LS-2017-075