

Chicken viruses have the potential to be used to deliver vaccines

What is this research about?

Fowl adenoviruses (FAdVs) are a group of viruses that cause disease in chickens. Recombinant viruses are viruses that have had their DNA modified for a specific purpose. FAdVs can be used as recombinant viruses to deliver vaccines or genes into an animal's genes.

The molecular details of FAdVs are not understood very well. This work aimed to show the ability of two recombinant FAdV-9 viruses to produce an antibody response to the protein added to the virus. This response would mean that FAdV-9 viruses have the potential to be used to deliver vaccines.

What did the researchers do?

Three different recombinant viruses were created using FAdV-9. Two viruses had enhanced green fluorescent protein (EGFP) added so the researcher could visualize the FAdVs. These viruses were non-pathogenic, meaning the chickens would not get disease from the virus.

The research was done with barred rock chicks. The chickens were split into 4 groups. Groups 1-3 received a different strain of recombinant FAdV-9, and group 4 didn't receive any virus. Groups 1 and 2 had the gene of the EGF protein in the re-

What you need to know:

The research demonstrated the FAdV-9 as a potential virus to deliver vaccines in rock barred chicken. They identified the region of the FAdV-9 DNA where the foreign genes can be added.

combinant viruses. The chickens received 3 boosters of the virus. The virus was delivered by giving a needle into the muscle of the chickens. To test the immune response to the virus the level of antibodies in the chickens was measured.

In each group of chickens there were 5 additional chickens that didn't receive any virus. The purpose of these chickens was to test if the virus spread from the infected chickens to these uninfected chickens. These birds are called sentinel birds and were tested regularly for the virus.

How can you use this research?

This research may be relevant to chicken producers and livestock organizations as the knowledge and technology in this area continues to develop.

What did the researchers find?

Three weeks after the chickens received the virus, antibodies to FAdV-9 were found in chickens in groups 1-3.

Groups 1 and 2 had antibodies to EGFP that continued to increase throughout the experiment. The antibody response to the different FAdV-9 recombinant viruses was not significantly different.

One sentinel bird in group 1, and one sentinel bird in group 2 became infected with the virus of the infected birds in their group.

The antibodies reached their highest level 7 weeks after the initial infection. This was after the additional booster shots. The researchers concluded that in barred rock chickens, booster shots with FAdV-9-based recombinant viruses are necessary to achieve the best immune response.

Virus was not detected in the feces of chickens in groups 1 and 2. The virus was found in the feces of infected and sentinel chickens in groups 3.

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