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French General Directorate for Food

ACTION PLAN FOR VACCINATION AGAINST HIGHLY PATHOGENIC AVIAN INFLUENZA (HPAI)

On-farm vaccination trials on Mulard ducks

In May 2022, France started trials to test vaccines on Mulard ducks with a view to protection against Highly Pathogenic Avian Influenza (HPAI). The purpose of these trials was to obtain scientific evidence as to the effectiveness and relevance of vaccination when dealing with this virus.

The trials were conducted under the terms of an agreement signed between the Ministry of Agriculture, ANSES (French Agency for Food, Environmental and Occupational Health & Safety), ENVT (National Veterinary School of Toulouse), CIFOG (the interbranch committee for the duck and geese foie gras sector), the pharmaceutical firms supplying the two candidate vaccines (Boehringer Ingelheim Animal Health and Ceva Santé Animale), in addition to the administrations of the French regions helping to fund the programme: Bretagne, Nouvelle-Aquitaine, Occitanie and Pays de la Loire.

These actions were unrelated to applications for authorisation the pharmaceutical firms will need to build and file with the French Agency for Veterinary Medicinal Products (ANMV).

DESCRIPTION OF THE TRIALS

a. The candidate vaccines

Two candidate vaccines were selected:

- Volvac B.E.S.T. AI+ND® from Boehringer Ingelheim animal health
- Duck H5-SRV vaccine® from Ceva Santé Animale

Selection of the candidate vaccines was based on their antigenic composition and pre-existing experimental data suggestive of effectiveness against clade 2.3.4.4b in ducks.

b. Trial organisation

The purpose of the trials was to obtain data on Mulard ducks with regard to induced immune response, ability to reduce viral excretion and ability to slow viral transmission.

The study was conducted in two phases, each comprising a series of trials in field conditions and a series of studies in experimental conditions in animal laboratory facilities in order to generate data on Mulard ducks relating:

- in the first phase, to the ability of the vaccines studied to provide clinical protection and to reduce viral excretion;
- in the second phase, the ability of the vaccines studied to slow transmission of clade 2.3.4.4b HPAI virus in a population of vaccinated ducks.

The farms selected for the series of trials in field conditions were located in four different French territorial *départements*. On these holdings, ducks were vaccinated and unvaccinated controls were kept. Virological and serological samples were taken from each group to detect any circulating influenza virus and to measure the immune response of the vaccinated animals. In the case of each of the vaccines studied, one of the trial farms was monitored up to the end of force-feeding, in order to verify persistence of the levels of immunity up to the end of the production process. Following this, one of the farms presenting a typical post-vaccination response was selected for each vaccine, where ducks (vaccinated and controls) were transferred to national reference laboratory (LNR) A3 containment animal facilities.

After a phase of adaptation, the birds transferred to the LNR were subjected to viral challenge by administration of clade 2.3.4.4b H5HP virus. The purpose of the viral challenges in the first phase of the study was to assess the level of replication and the duration of excretion of the challenge virus in previously vaccinated subjects. The purpose of the viral challenges in the second phase of the study was to evaluate the spread of the challenge virus in a population of previously vaccinated subjects.

It should be noted that the vaccinated birds and the "control" birds were euthanised at the end of rearing and no products from them were introduced into the food chain.

TRIAL RESULTS

The results indicate satisfactory effectiveness for the vaccines tested on Mulard ducks.

An initial interim report presents in summary the results of the trials conducted in field conditions and, in greater detail, the trials focused on studying the reduction in excretion. The results in this first report show that both vaccines tested demonstrated their ability to significantly reduce the levels and durations of excretion of the challenge virus via the respiratory and digestive tracts in the vaccinated subjects.

A second report presents the results of the assessment of reduction in viral transmission in farmed Mulard ducks and subsequently challenged at the age of seven weeks. The results of this trial showed control of direct transmission of HPAI in vaccinated birds ($R0<1$) for both vaccines tested and absence of transmission by indirect contact (airborne transmission).

These favourable results provide sufficient guarantees for the launch of a vaccination campaign from autumn 2023.

For more information:

Reports and summaries in English can be obtained via the following link:
https://agriculture.gouv.fr/experimentation-de-vaccination-des-canards-mulards-en-elevage-contre-un-virus-HPAI-rapport

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