

**For Discussion
on 11 January 2011**

LegCo Panel on Food Safety and Environmental Hygiene

**Field Trial Programme using
the Harbin Re-5 H5N1 Avian Influenza Vaccine
in Local Chicken Farms**

Purpose

This paper briefs Members on a field trial programme to evaluate the efficacy of the Harbin Re-5 H5N1 Avian Influenza (AI) vaccine against Highly Pathogenic Avian Influenza (HPAI) viruses in local chicken farms.

AI Vaccine Study

2. Since the introduction of the mandatory AI vaccination programme for chickens in local farms in 2003, local farmers have been using the Intervet Nobilis H5N2 vaccine. No AI outbreaks occurred on local chicken farms until in December 2008 when AI infection was detected in both vaccinated and unvaccinated chickens in a farm in Yuen Long. Genetic analyses of the virus isolated from the infected chickens showed that the virus responsible for the outbreak was closely related to but had some genetic differences from the HPAI viruses previously found in Hong Kong.

3. Following the AI outbreak in December 2008, the Administration set up two investigation groups to conduct respectively (a) an epidemiological study on the infected farm to find out the possible causes/sources of infection and examine the adequacy of biosecurity measures of the infected farm; and (b) a vaccine study to examine the efficacy of the existing vaccine and to explore alternative vaccines. The convenor of the Investigation Group on Vaccine Study (IGVS) is the Director of Agriculture, Fisheries and Conservation, and members include experts from the University of Hong Kong, the Ministry of Agriculture of the Mainland, representatives of the Agriculture, Fisheries and Conservation Department (AFCD) and the Department of Health.

4. With the endorsement of the IGVS, AFCD engaged three research institutions¹ to conduct vaccine challenge studies. The purpose of such studies was to examine and compare the efficacy of three AI vaccines against representative clades of H5N1 viruses detected in Hong Kong, including the virus found in the local chicken farm in December 2008. The three vaccines studied were (a) the Intervet Nobilis H5N2 vaccine (Intervet vaccine) currently in use on all chickens in local farms since 2003, (b) the Harbin Re-5 H5N1 vaccine (Re-5 vaccine) currently in use on chickens reared in the Mainland for export to Hong Kong, and (c) a H5N3 vaccine used in the European Union since 2006. The studies showed that the existing Intervet vaccine is still largely effective in protecting local chickens from the H5N1 HPAI virus. This notwithstanding, the studies also showed that the Re-5 vaccine provided similar or even better protection as compared with the Intervet vaccine.

5. The IGVS noted that the Re-5 vaccine has been used in all chickens produced in the Mainland for export to Hong Kong since 2008 and no HPAI virus has been detected in the imported chickens so far. It is now the main vaccine used in poultry across the Mainland for protection against HPAI. However, the Re-5 vaccine is yet to be registered for use in Hong Kong.

6. In view of the above, the IGVS considered it prudent and appropriate to continue to use the current Intervet vaccine for vaccinating chickens in local farms for now. In parallel, the IGVS considered that before making a conclusive recommendation on the introduction of the Re-5 vaccine to vaccinate chickens on local chicken farms, there is a need to conduct field trials in local farms in order to comprehensively evaluate its efficacy and to observe whether it would have any adverse effect on chickens under local conditions.

Chicken Farming in Hong Kong

7. There are currently 30 chicken farms in Hong Kong with a total licensed rearing capacity of 1.3 million chickens. It is the usual practice of chicken farmers to raise chickens in successive batches

¹ The three research institutions were the Harbin Veterinary Research Institute, the Department of Microbiology of the University of Hong Kong and the Veterinary Laboratories Agency under the Department for Environment, Food and Rural Affairs of UK.

throughout the year, and the size of each batch ranges from 2 000 to 5 000 chickens. Since the introduction of the mandatory AI vaccination scheme in Hong Kong in 2003, all farmers are required to keep 60 chickens without AI vaccination (known as sentinel chickens) with each batch of chickens to enable early detection of any HPAI virus introduced into the farm.

Design of the Field Trial

8. Local poultry farmers have been invited to participate in the field trial on a voluntary basis. Participating farmers must have a good track record of good husbandry management and agree to meet the requirements of the field trial, including vaccinating their chickens in accordance with the designed vaccination programme, closely monitoring and timely reporting to AFCD on any adverse effects of vaccination on vaccinated chickens as well as health problems/mortalities of farmed chickens, etc.

9. The field trial will be conducted for a period of up to 12 months. During the trial period, each participating farm may raise about 8 to 10 batches of chickens (which is on par with the normal rearing cycle of a similar sized farm in a 12-month period), of which 4 to 5 batches of chickens will be vaccinated with the Intervet vaccine while an equivalent number of batches of chickens will be vaccinated with the Re-5 vaccine. AFCD staff will be present during the vaccination to ensure that all vaccines are properly applied to chickens.

10. During the trial period, blood samples and cloacal swabs will be collected from both vaccinated chickens and sentinel chickens at pre-determined intervals (on the day before the first vaccination, 28 days after the first vaccination, 28 days after the second vaccination and within 10 days before marketing respectively) for laboratory testing for antibody response (H5 antibody titre level) and presence of AI virus. AFCD's Veterinary Officers will also conduct weekly clinical monitoring to look for any clinical signs of AI infection such as nasal discharge, cyanosis of the comb, mortality, etc. All the dead chickens, and sick ones as deemed necessary by the Veterinary Officers, will be sent to AFCD for disease investigation. In addition, environmental samples will be collected from each farm per month for AI virus testing to monitor the presence of AI viruses in the farm environment.

11. Should there be any irregularities such as serious disease outbreak or abnormally high mortality of chickens in any of the participating farms during the trial period, AFCD will temporarily suspend the field trial in that farm and immediately conduct investigation into the possible causes of the situation. If it is confirmed to be caused by HPAI infection, actions will be taken in accordance with the established AI contingency plan while an epidemiological investigation will be conducted to trace the source of the infection. If the abnormal situation is not relevant to HPAI infection, the field trial will resume whereby the chickens will be vaccinated by the same vaccine before the suspension according to the established protocol.

12. The Government will continue to maintain a high degree of vigilance against AI. Vaccination is only one of the measures to protect chickens from the HPAI virus. All other biosecurity measures on chicken farms will continue to be implemented and enforced. These include the installation and maintenance of metal mesh net for preventing entry of wild birds into chicken farms, enhanced hygiene facilities and visitor control measures. AFCD will continue to conduct regular farm inspections and remind chicken farmers to stay vigilant in maintaining the standard of biosecurity measures, particularly amid the AI peak season during the winter months.

Progress

13. Through the assistance of the New Territories Chicken Breeders' Association, AFCD invited all local chicken farms to participate in the field trial on a voluntary basis. Subsequently, two farms (a medium and another small size) agreed, and were considered suitable and together could be regarded as representative samples, to participate in the field trial. The field trial was launched in early November 2010.

14. The full-year field trial will continue for another ten months. Upon its completion, a comparative scientific analysis of the monitoring and testing data gathered during the field trial will be conducted to assess the immune response of chickens to the Re-5 vaccine as compared with the Intervet vaccine and to determine whether any adverse or side effect occurred in the vaccinated chickens that is associated with the use of the Re-5 vaccine under local farm conditions.

15. On the basis of the results of the field trial and data analysis, the IGVS will make a recommendation on the proper choice of vaccines to be used in local chicken farms, with a view to providing the most effective protection to the local chicken population against HPAI viruses. The manufacturer of the Re-5 vaccine has also been informed of the requirement to register the vaccine in Hong Kong before it can be used on local chickens.

Advice Sought

16. Members are invited to note the design and progress of the field trial.

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