5. DISCUSSION AND CONCLUSION

Outbreaks of highly pathogenic avian influenza can be catastrophic for single farmers and for the poultry industry of an affected region as a whole. Economical losses are usually only partly due to direct deaths of poultry from HPAI infection. Measures put up to prevent further spread of the disease levy a heavy toll. Nutritional consequences can be equally devastating in developing countries where poultry is an important source of animal protein. Once outbreaks have become widespread, control is difficult to achieve and may take several years (WHO 2004/01/22). Knock-on effects will manifest for industries such as poultry-feed growers, poultry processors, grocers, and restaurants, not only those specializing in chicken, but also the other kinds of poultries. Quails, guinea fowls, ducks, geese, ostriches, passerine birds and birds of prey are also susceptible to the disease. The pandemic horror has been aroused globally. Although there are conflicting reports on the susceptibility of the domestic pigeon, there was not systematic epidemiological study on the infection of H5N1 avian influenza virus in pigeons in Harbin, China until now.

5.1 The infectious status of avian influenza virus of pigeons in Harbin City

According to the reported data by the forestry branch office of Harbin Government, the total number of resident birds species have been increased significantly in the past few years. There were about 355 kinds of species of birds observed, among which resident birds take up 15% (Zhao *et al*., 1999). As a kind of resident bird, pigeon are distributed almost in every corner of Harbin city. No positive results were observed from the 205 pigeons by virus detection and isolation in this epidemiological investigation in 2 different durations. This is consistent with the previous epidemiological data about the infectious status of H5 avian influenza virus in pigeons. It has been reported that the city pigeons have been required to be vaccinated against H5N1 avian influenza. But no antibody against H5N1 avian influenza virus was detected in this study.

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On the other hand, the cumulative positive rate against H9 and Newcastle Disease was 24.3% and 11.8% respectively. Due to the obscure situation of the immunization background information of the 205 pigeons, it is difficult to conclude that the antibody level present in the pigeon blood is from natural infection or from immunization. The further study is necessary to be done about the risk status of pigeons on the public health issues related to H9 low pathogenic avian influenza and Newcastle Disease.

5.2 The veterinary public health strategies toward the risk of pigeon avian influenza by Chinese government

Since the outbreak of H5N1 avian influenza in 2004 in China, there have been different veterinary public health strategies and actions toward the risk of pigeon avian influenza by Chinese government, including city pigeons, race pigeons and meat pigeons.

5.2.1 The vaccination and flying limitation of city pigeons

The city pigeon in capital cities of many provinces are required to be vaccinated against H5N1 avian influenza, such as the pigeons in live bird market, pigeons raised by pigeon fanciers and pigeons in public gathering for sightseeing. Even the flying of pigeons in public gathering in some cities is forbidden for a certain period of time.

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Citizens' awareness of the risk of pigeon upon the possible transmission of avian influenza virus is the main public voice of involving in the government policy-making process.

In Harbin city, the biggest pigeon sight-seeing spot, Sofya Church Square has been close for 3 months to accomplish the vaccination of H5N1 avian influenza virus of pigeons in 2006. This vaccination program received the wide attention from the

public, not only Harbin citizens but also different kinds of media and government offices, which indicated the awareness of public health issues of the pandemic flu among different stratified kinds of people.

While, there is another big problem necessary to be referred. The evaluation of vaccination of city pigeons has not been done systematically. It is not known about the vaccination efficacy of H5N1 avian influenza vaccine in the vaccinated, such as immunization density, population protection efficacy and the in-time antibody titre. This calls for the ongoing surveillance work of veterinarian epidemiologists in the related areas.

5.2.2 The strengthened administration of race pigeons

As a kind of business, housing race pigeons have developed since the 1980s in China. Pigeon fanciers from different geographical arrears send their pigeon in the pigeon house. The pigeons will be got trained and well nutrition before the fly competition. Due to the different sources of pigeons, the kind of pigeon house may provide a good mix environment of the different diseases agents, especially after the outbreak of avian influenza.

The new regulations have been set up about the management of competition pigeon house on the science-based evaluation of the public health issues and also the balancing of the benefits from fanciers and pigeon house managers. The basic objectives are to also to guarantee the heath status of competition pigeons to attain the long-length flight and to provide the emergency reaction strategies of avian influenza outbreak. The isolation, cleaning and disinfection, vaccination is required to be done strictly and routinely. The source tracing, transportation, feeding, training and competition should be systematically correlated and the individual record of each pigeon should be build up.

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5.2.3 The new slaughter routines of meat pigeons

There is an old Chinese saying: the nutrition from one pigeon is more than that from one chicken. The nutrition value of pigeons is thought to be especially high by Chinese people. People often buy the live pigeons from live birds markets and cook the pigeon back home. But the tradition slaughtering done by people is to make the pigeon asphyxia firstly not by bleeding. This is the way thought to retain the most nutrition in pigeon meat and soup. While now the new legislation about the slaughtering of pigeons need to be put into force in many parts of China. Pigeons are required to be bleed completely before cooking. People should discard the tradition consumption methods of pigeons considering the possible risk of pigeons holding the avian influenza virus and other disease agents. The “fresh” concept should also be changed. The pigeon carcass and the organs of pigeons after being slaughtered should be deep frozen in -35℃ for more than 2 hours.

This new regulation of pigeon slaughtering will provide a bright future for the food safety of meat pigeon. All in all, the pigeons are very resistant to the Low pathogenic Avian Influenza virus, but there is a chance that they become infected with the Highly Pathogenic Avian Influenza virus, which is confirmed by recent research. This means that we have to be careful in this matter concerning the outbreak of the AI. Pigeons do not play a very important role in the transmission of the AI, but not being important does not mean that they do not play a role at all.

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