ACM/631

DISCUSSION PAPER

ADVISORY COMMITTEE ON THE MICROBIOLOGICAL SAFETY OF FOOD (ACMSF)

AVIAN INFLUENZA : ADVICE ON THE RISK TO HUMAN HEALTH

Background

1. Two developments have led the Agency to seek expert advice from ACMSF regarding the risk to human health through the food chain from strains of Avian Influenza (AI).

2. The first is a survey of the incidence of low pathogenicity H5 and H7 strains of AI in chickens, turkeys, geese and ducks and the second is the recent series of outbreaks of highly pathogenic AI in laying flocks in the Netherlands.

Proposed survey of H5 and H7 strains in asymptomatic poultry flocks

3. EC control measures relating to AI currently apply only to highly pathogenic strains. However, in recent years it has become apparent that low pathogenicity H5 and H7 strains of AI can mutate and develop into highly pathogenic strains. For example, in 1999, a strain in Italy mutated from low to high pathogenicity, resulting in 413 outbreaks and the death / slaughter of fourteen million birds. As more birds are being housed outside this increases the risk of an outbreak of AI because wild waterfowl are a major reservoir for the virus.

4. Commission Decision 2002/649/EC therefore requires that all member states undertake surveys for AI in poultry and wild birds. This is linked to consideration of the possibility of changing the definition of AI to require control measures to be applied to more AI strains.

5. The survey is designed to detect the presence of AI strains and to give an idea of how wide spread the strains are across the Community. Broilers, layers and turkeys will be surveyed by antibody testing of blood samples taken at abattoirs. Hence, if positive, they may indicate infection at some time in the past, rather than active infection. Geese and ducks will also be sampled at abattoirs but, in their case, cloacal swabs or faeces will be taken for viral isolation.

6. The serological survey will be anonymous. Defra and VLA will not be able to follow up the results of serological tests. In the case of cloacal swabs,

samples will probably be pooled. Any viral isolates will be identified and typed but again the samples will be anonymised and no traceback will be undertaken. Moreover, by the time the tests are carried out, the birds will have passed into the food chain, and will probably have been consumed. Discussions are still underway as to what the procedure would be in the unlikely event that a highly pathogenic strain was isolated.

Outbreaks of Highly Pathogenic Avian Influenza (HPAI) in the Netherlands

7. A total of 25 outbreaks have been reported since the end of February, mainly in an area of the country close to the German boarder. All outbreaks have been in laying flocks. Affected flocks have been slaughtered and the dispatch of any live poultry or hatching eggs from the Netherlands has been banned. Export of poultry meat is still permitted.

8. Virological tests have shown that the virus is an H7N7 strain of AI.

Assessment of possible risks to human health

9. Until recently, it was thought that, whilst AI strains might recombine in pigs and result in strains that were capable of infecting humans, AI was unable to infect humans directly.

10. However, cases have now been reported, including one in England in 1996, in which H7N7 strains have infected humans by direct inoculation of the virus from fomites, giving rise to conjunctivitis. Moreover, strains of H5N1 and H9N2 AI virus in the Far East have caused flu-like illness in humans in recent years. There have been 2 outbreaks of H5N1 virus. The first, affecting 18 people with 6 deaths, occurred in 1999 in Hong Kong. A further outbreak this year has involved 2 people in Hong Kong, one of whom died. A relative who had become ill and died whilst visiting the Chinese mainland may also have been affected. Transmission in these cases has been by direct droplet spread from affected birds and there has been little or no person to person spread. Neither the handling nor consumption of poultry meat has been associated with illness.

11. These cases suggest that the species barrier is not absolute. However, there are a number of factors that, when taken into consideration, suggest that the risk associated with the consumption of meat or eggs from poultry affected by AI, if any, will be extremely small.

12. Clinically affected poultry will be excluded from slaughter as a result of pre-slaughter veterinary checks. Thus, the only exposure in poultry meat should be to low pathogenicity AI viruses.

13. Proper cooking will destroy any virus present in meat or eggs. Moreover, non-specific defences, such as saliva and gastric acid, provide a primary barrier against infection following ingestion of viruses.

14. The available information suggests that avian strains do not transmit frequently to humans and there are no reports of transmission other than through contact with live birds or their fomites.

15. Studies of people occupationally exposed to chicken populations with a significant prevalence of apathogenic strains of influenza have failed to show antibodies. However, it should be pointed out that these studies were performed using haemagglutination inhibition tests (HI) that are insensitive for detecting antibodies to avian influenza and so are not conclusive. There is now unpublished data suggesting that antibodies to AI can be found in human populations using tests such as neutralisation. On the other hand whilst, if substantiated, this would suggest a greater frequency of transmission to humans than currently appears to be the case, if not accompanied by any history of illness, it would tend to support the view that many strains of AI are not pathogenic in man.

16. In relation to the outbreaks of AI in the Netherlands, H7 strains have not been shown to cause systemic illness in humans. Moreover, partial sequencing of the 6 internal genes of the virus (between 600 and 900 nucleotides) provide reassurance that the virus has not acquired genes that would enable it to cause significant disease in humans or allow it to spread from person to person.

17. Whilst birds have receptors in the epithelial cells of the gastrointestinal tract as well as in the respiratory tract that can mediate cleavage of the viral haemagglutinin protein and support viral replication, the classic mode of spread and infection is via the respiratory tract.

18. For all these reasons, the risk to human health through the food chain from avian influenza viruses, whether of high pathogenicity or low pathogenicity, appears to be extremely small.

Action required

19. The risk assessment presented in this paper represents a preliminary position based on the Agency's in-house expertise and informal views from David Brown. It would be helpful for the Agency to have a more formal assessment of the risk so that it can determine appropriate risk management strategies.

20. It is suggested that ACMSF ask David Brown to convene an ad hoc group of experts to provide this formal advice.

21. Members are asked to agree that this group should be set up and to comment on the preliminary risk assessment.

Secretariat

10 March 2003