

**A model for introduction & ensuing spread of a duck origin H5N3 low pathogenic avian influenza virus in chickens**

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Avian Influenza Virus (AIV) is found in numerous bird species throughout the world. Circulation of the virus within a susceptible population may lead to further adaptation to this host species. When different bird species come into contact, interspecific transmission of AIV may occur. In this study, a duck-origin H5N3 LPAIV was used in inter- and intraspecies transmission experiments, performed in isolation units. In a series of interspecies transmission experiments, experimentally infected Peking Ducks were brought into contact with SPF chickens in either a direct (housed in the same isolator) or indirect (contact with feces or drinking water from infected ducks) way. In intraspecies transmission experiments, experimentally infected SPF chickens were brought into direct contact with susceptible SPF chickens. In all experiments, virus shedding from animals was followed-up by RRT-PCR analysis of oropharyngeal & cloacal swabs and reproduction ratios were estimated using serological data. Direct interspecies transmission experiments showed virus transmission and following R values: 1.46 [95% CI: 0.55-4.14; infected/susceptible ratio=12/12] and 0.76 [95% CI: 0.10-5.49; infected/susceptible ratio=3/6]. Interestingly, indirect interspecies virus transmission was seen via infectious drinking water as 3 out of 6 SPF chickens were positive in AIV-specific antibodies, but was not seen via infectious duck feces. Conversely, intraspecies virus transmission between SPF chickens was not observed. This study demonstrates that direct or indirect contact between domestic poultry and infected wild birds is sufficient for the introduction of LPAIV in a domestic poultry holding. However, since it was not observed in this case, establishment of a wild bird-origin LPAIV that has been introduced in a domestic poultry holding may largely depend on the viral strain under consideration.