

SWINE HEALTH

Title: Evaluation of novel reassortant swine influenza viruses (#12-095)

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Scientific abstract

Introduction of the 2009 pandemic H1N1 (pH1N1) virus into swine herds has resulted in reassortant events with endemic swine influenza viruses (SIVs) worldwide. We have isolated reassortant H3N2 and H1N2 SIVs containing 1 to 6 genes from pH1N1 from diseased pigs in U.S. Midwest swine farms with outbreaks of respiratory disease. However, little is known on the pathogenicity and transmissibility of these reassortant viruses in pigs and whether these novel reassortant viruses will be maintained in the swine operations. In the present study, we investigated pathogenicity and transmissibility of these novel reassortant viruses in pigs and performed concurrent syndromic surveillance to determine whether they can be established and become predominant viruses in pigs. Pig studies showed that all tested reassortant SIVs including H3N2 and H1N2 viruses are pathogenic and transmissible in pigs when compared to the endemic H3N2 and H1N2 viruses. Furthermore, the reassortant H3N2 viruses with NP, M and NS genes from pH1N1 are more transmissible in pigs when compared to the reassortant H3N2 virus with 5 genes (PA, PB2, NP, M and NS) from pH1N1; the H1N2 variant caused more severe lung lesions in infected pigs when compared to the reassortant H1N2 with 6 genes (PA, PB1, PB2, NP, M and NS) from pH1N1 and endemic H1N2 viruses. Concurrent swine surveillance for influenza viruses showed that both novel reassortant H3N2 virus with 3 genes from pH1N1 and the H1N2 variant are 2 major novel reassortant viruses that are continually isolated from swine herds in the Midwest swine farms. All these data indicate that both virus most likely will be maintained in swine herds and could pose a big threat to the swine industry.

These research results were submitted in fulfillment of checkoff-funded research projects. This report is published directly as submitted by the project's principal investigator. This report has not been peer-reviewed.

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