

MOLECULAR CHARACTERIZATION OF SWINE INFLUENZA VIRUSES ISOLATED FROM PIGS IN BRAZIL IN THE LAST TWO YEARS

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Influenza A virus infections are endemic in pork producing countries around the world. The emergence of the pandemic 2009 H1N1 influenza A virus (pH1N1) raised questions about the occurrence of this virus in pig herds in Brazil. As a result of an investigation of influenza virus in pigs during a 2009-2010 swine influenza virus research project at Embrapa Swine and Poultry (CNPISA), the first report of an outbreak of pandemic A/H1N1 influenza virus in pigs in Brazil was described. Since then, we have analyzed 646 samples of nasal swabs or lung tissue collected from pigs of various ages and raised in commercial herds in Southern Brazil. These isolates were screened for influenza virus matrix gene by RT-PCR. Positive RT-PCR samples were submitted to virus isolation in SPF embryonated chicken eggs or in MDCK cells. Viral RNA was extracted, reverse-transcribed and the nucleotide sequencing of influenza virus genes was performed. A total of 111 (17.18%) samples were positive by RT-PCR and 46 (41.44%) influenza viruses were isolated. Complete and partial HA, NA, M, NP, PB1, PB2 and PA gene segments of 25 swine influenza viruses were obtained. Based on the sequence analyses of HA, NA, M and PB1 genes, 16 influenza viruses showed a high identity (98-100%) with pH1N1 that has circulated in humans since 2009. Five influenza viruses were closely related to an American H3N8 equine influenza virus (EIV) and four virus isolates, based on the sequence analyses of HA, NA, M, NP, PB1, PB2 and PA genes, revealed to be a novel reassortant H1N2 influenza virus that had not been detected in pigs in Brazil before the recent influenza outbreak in pigs. This work emphasizes the importance of influenza surveillance in pigs through the whole genome sequencing in order to provide information about changes in influenza viruses circulating in pigs, to detect novel influenza viruses and to identify viruses that can be used for research and for vaccine production.

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