ANTIBODIES AGAINST HUMAN INFLUENZA VIRUSES IN PIG POPULATION IN THE CZECH REPUBLIC

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Introduction

In the mid-1990s, serological surveillance of pig herds revealed no antibodies against swine influenza virus. However, in 1996, several herds showed antibodies against human influenza virus A/Praha/625/95 (H3N2), a causal agent of the 1995 influenza epidemic (Pospisil et al., 2001). In the surveillance carried out in 2002 as part of the ESNIP project, we detected antibodies against swine influenza viruses with H1 haemagglutinin, and occasionally also against H3 virus and the new variant H1N2 in the sera of sows.

Material a Methods

Considering the findings from 1996, we tested these sera against human influenza viruses A/New Caledonia/99 (H1N1) and A/Plzen/2000 (H3N2) and compared the results with antibody levels against the swine influenza viruses
A/Sw/Gent/132/86 (H3N2),
A/Sw/England/117316/86 (H1N1),
A/Sw/Scotland/410440/94 (H1N2) and
A/Sw/Finistiere/82 (H1N1 avian-like) used in the ESNIP project. Haemagglutination inhibition tests were used (Final Report ESNIP, 2004). Sera with a titre of 1:40 and higher were regarded as positive. The specific pig antisera against viruses A/Sw/Gent/132/86, A/Sw/Scotland/410440/94 and A/Sw/Finistiere/82 obtained from the ESNIP project were used as positive controls. These sera reacted against homologous viruses at titre levels of 1:320 to 1:640. None reacted with any of the human viruses.

Results

Out of 666 sera examined, we detected antibodies against the human influenza virus A/Plzeŕŕŕ2000 (H3N2) in 47 samples at titre levels ranging from 1:40 to 1:320, and against the virus A/New Caledonia/99 (H1N1) in 7 samples at titre levels ranging from 1:40 to 1:80. In 14 samples with antibodies against A/Plzeŕŕŕŕ2000 (H3N2) we also found antibodies against A/Sw/England/117316/86 (H1N1). However, none of the sera that tested positive against virus A/New Caledonia/99 (H1N1) were also found positive against any of the swine influenza variants with haemagglutinin H1 or H3, table 1.

Table 1

Number Positive/ Total number (% positive)		
Viruses	Samples	Herds
A/Plzen/2000	47 / 666 (7,1%)	24 / 85 (28,2%)
A/Plzen/2000 and A/sw/Eng/86 or A/Sw/Fin./82	15 / 666 (2,3%)	6 / 85 (7,1%)
A/New Caledonia/99	7 / 666 (1,1%)	6 / 85 (7,1%)
A/New Caledonia/99 and Sw/Gent/84	0 / 666 (0%)	0 / 85 (0%)

Conclusion

Our results show that infection of pig herds with both human and swine influenza viruses is currently possible in the Czech Republic and that there is a potential of the development of new influenza variants.

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