

Serological Evidence of Influenza A Virus Infection in Thai Pigs, 2014

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Keywords: Influenza A virus, pig, sera, survey, Thailand

Introduction
Swine influenza virus (SIV) outbreaks have been reported in pigs in many countries worldwide. At present, there are 3 major subtypes of SIVs (H1N1, H1N2 and H3N2) circulating in pig populations (1). Interspecies transmission of SIVs has become a threat to public health, since pig plays an important role as a mixing vessel of influenza A viruses (IAVs) (2). In Thailand, SIV have been circulating for more than 40 years since it was first isolated in this country in 1981 (3). However, information related to serological profile of IAV infection in pigs in Thailand is rarely implemented. In this study, serological survey of IAV infection in pigs was conducted in pigs in Thailand during September 2014 to December 2014 by using an NP-ELISA and HI assay.

Materials and Methods
Sample collection: 246 sera samples were randomly collected from pigs, including 4, 8, 12, 16, 20-week-old pigs and sows during September 2014 to December 2014. Three pig farms were selected due to their locations in high density of pig production areas.

Serological tests: All sera samples were examined for antibody against influenza A nucleoprotein (NP) using ID Screen® Influenza A Antibody Competition ELISA kit (ID VET, Montpellier, France). The positive and suspected ELISA samples were subjected to HI testing with SIV-H3N2, SIV-H1N1 and human pandemic H1N1 2009 (Human-pH1N1) test antigens for confirmation of specific subtype antibodies to SIV-H3N2, SIV-H1N1 and Human-pH1N1. Samples with HI titers ≥ 40 were considered positive evidence to previous exposure.

Results and Discussion
NP-ELISA result showed that 92 out of the 246 sera samples (37.4%) were positive for antibodies against IAV. Out of 92 positive and suspected samples from NP-ELISA test, 33 samples (35.87%), 35 samples (38.04%) and 33 samples (35.87%) posed positive HI titer for SIV-H3N2, SIV-H1N1 and Human-pH1N1, respectively (Table1). Overall, our serological survey indicated that the evidence of IAV exposure was found in pigs in Thailand. HI antibodies against SIV-H3N2, SIV-H1N1 and Human-pH1N1 viruses from pigs demonstrated previous exposure of SIV-H3N2, SIV-H1N1 and Human-pH1N1 viruses in pig population in Thailand in 2014, indicating several SIV subtypes circulating in Thai pig populations.

Table1 Percentage of seropositive samples from pigs detected by HI tests.

<table>
<thead>
<tr>
<th>Virus</th>
<th>Total No. of tested sera samples</th>
<th>No. &amp; (%) of HI positive samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swine-H3N2</td>
<td>92</td>
<td>33 (35.87)</td>
</tr>
<tr>
<td>Swine-H1N1</td>
<td>92</td>
<td>35 (38.04)</td>
</tr>
<tr>
<td>Human-pH1N1</td>
<td>92</td>
<td>33 (35.87)</td>
</tr>
</tbody>
</table>

Acknowledgements
This work was supported by National Research University Project, Office of Higher Education Commission, Chulalongkorn University (WCU005-HR57). We would also like to thank the Thailand Research Fund for its financial support to the TRF Senior Scholar to AA (RTA5780006)

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