Impact of Reproductive Performance of Sows in The Next Parity After Porcine Epidemic Diarrhea Virus Outbreak

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**Introduction**
Porcine Epidemic Diarrhea Virus (PEDV) can spread quickly and throughout the country to be pandemic stage, which makes pig farm in Thailand for over 90% infected. There are many causes repeated infections in farm and ranch could become endemic disease (6). PEDV can make the farrowing sow lost 100% of sucking piglets. Sows lost all piglet have been affected by these sows will take 14-21 days to return the estrus and mating again. It is also known that the growth of follicle of sows in the next cycle will occur during lactating of sows (4). There is the report that the litter size and the number of sucking piglet effect on pre-ovulated follicle and litter size in the next sows (5). Therefore the study of the effects of PEDV on sows lost all piglets will bring benefit and plans to solve the problem in the future.

**Materials and Methods**
In total, 120 Sows (LY), which was raised on a farm where have an outbreak of the PED rather than one-time were used in this study and divided into four groups and the criteria for selection are as follows; 1) 30 primiparous sows lost all piglets from PEDV infection (PPI), 2) 30 healthy primiparous sows (PPC), 3) 30 multiparous sows lost all piglets from PEDV infection (MPI), 4) 30 healthy multiparous sows (MPC). They were accommodated in an open housing system with a density of 2.0 m² per head. Feed was provided by 2.5 kg/pig/day, meanwhile water was ad libitum accessed from water nipples equipped on the pen. Health status was routinely checked up by experienced veterinarians. After weaning or recover from PEDV infection, estrus detection by back pressure test, together with boar contact was conducted. Those expressed estrus signs within 14 days were recorded the backfat and examined the follicle characteristics by ultrasonography (Aloka SSD-500V, Tokyo, Japan) in order to investigate pre-ovulated follicles. The ovarian follicles with an ultrasonographic diameter of >6.0 mm were considered pre-ovulated follicles (2). All of estrous sows were mated using artificial insemination. The percentage of sows return to estrus within 14 days (Return14), farrowing rate (FR), number of pre-ovulated follicles (NoFol) and litter size were presented by mean±SD. The number of pre-ovulated follicles and litter size compared between groups in the same parity by Student’s t-test and the percentage of sows return to estrus within 14 days and farrowing rate by chi-square (SAS 9.3, SAS Institute, Cary NC).

**Results and Discussion**
The results of this present study show that no sows lost all piglets return to estrus with 7 days. In contrary, the normal primiparous and multiparous sows have a high percentage of the estrous return within 7 days (86.6 and 90%, respectively) and have a better farrowing rate and litter size than the infected sows (P<0.05) (Table 1) Our results revealed that the influence of the PEDV outbreak on reproductive performances was more effect in primiparous sows. The primiparous sows exhibited severe clinical signs of anorexia, diarrhea and vomiting when infected with PEDV. Previous studies have reported that increasing feed intake during lactation can increase luteinizing hormone secretion and reduce the weaning-to-estrous and farrowing-to-estrous intervals in primiparous sows (3) The low-parity sows were more sensitive to lactational feed intake than high-parity sows in terms of weaning to first service interval (WFSI) (1). This present study is the first report that show the effect of PEDV infection on the reproductive performance of the sow in the next parity. These findings should support to an understanding of the impact of PEDV outbreak post-infection on sow herds and to an identification of ways to improve the reproductive performance of sows after PEDV infection.
Table 1 Reproductive performances of sows after PED outbreak comparing with the normal sows

<table>
<thead>
<tr>
<th>Group (n)</th>
<th>Reproductive performances of sows</th>
<th>Return1</th>
<th>FR(%)</th>
<th>Pre-Fol</th>
<th>TB*</th>
<th>BA*</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPI (30)</td>
<td>76.7±4a1</td>
<td>14.1±3.2a1</td>
<td>9.9±1.2a1</td>
<td>8.9±1.9a1</td>
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<td></td>
</tr>
<tr>
<td>PPC (30)</td>
<td>90±2b2</td>
<td>21.8±3.7b2</td>
<td>12.1±1.7b2</td>
<td>11.4±1.3b2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MPI (30)</td>
<td>83.3±3ab2</td>
<td>11.9±2.6c2</td>
<td>10.6±1.6b2</td>
<td>10.6±1.6b2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MPC (30)</td>
<td>93.3±2c2</td>
<td>13.5±1.5c2</td>
<td>12.5±2.5c2</td>
<td>12.5±2.5c2</td>
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</tr>
</tbody>
</table>

*TB= total born piglets, BA= born alive piglets

abc Columns with different superscripts differ P<0.05
123 Columns with different superscripts differ P<0.01

Acknowledgements
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References