Nearly all pigs in the US are vaccinated against PCV2 around weaning to prevent PCVAD. PCV2-specific antibodies and PCV2 virus are often observed in the same animal, even though vaccination prevents disease. PCV2 capsid-specific ELISA antibody levels may not be indicative of a protective immune response. Vaccination does not always induce ELISA detectable antibodies, but vaccination protects against PCVAD. Anti-PCV2 neutralizing antibodies may be a more effective indicator of a protective immune response against PCV2.

**Objective**

To determine if neutralizing antibody titers are an indicator of a protective immune response against PCV2 infection.

**Results**

- Placental umbilical cord (PUC) blood collected at birth during routine pig screening was PCR-positive for PCV2 in <5% of samples on most farms. However, >50% of samples were positive on two farms (Table 1). No significant health differences between farms were noted.
- Anti-capsid antibodies levels (ELISA) varied within and between farms independently of PCV2 status (Table 1).
- Neutralizing antibody titers in colostrum were extremely high (≥1/25,000 average on all farms). Higher levels were observed in farms with no PCV2 positive animals (Table 1).
Conclusions

- PCV2 capsid antibody titers do not correlate with viral titers.
- High neutralizing antibody titers in colostrum were observed in all animals.
- Higher PCV2 neutralizing antibody levels correlate with lower viral titers.

Table 1. PCV2 viral and antibody levels in 4 commercial sow farms.
Note: There was a significant difference in neutralizing titers observed between the PCV2 negative farms (Farms 1 and 2) and farms 3 and 4, which had a high % of virus positive animals (p<0.0001).

<table>
<thead>
<tr>
<th>FARM</th>
<th>Virus positive PUC samples (%)</th>
<th>Avg ELISA S/P ratio (PUC)</th>
<th>Avg 50% Neutralizing Antibody titer (1/X) (colostrum)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0/111 (0%)</td>
<td>0.50</td>
<td>117,000</td>
</tr>
<tr>
<td>2</td>
<td>0/100 (0%)</td>
<td>0.73</td>
<td>41,000</td>
</tr>
<tr>
<td>3</td>
<td>33/52 (63%)</td>
<td>0.57</td>
<td>25,000</td>
</tr>
<tr>
<td>4</td>
<td>44/87 (51%)</td>
<td>0.74</td>
<td>28,000</td>
</tr>
</tbody>
</table>

Final summary

The negative correlation between neutralizing antibodies and viral titers suggests that neutralizing antibodies help in controlling PCV2 infection. PCV2 capsid-specific antibodies (ELISA) are not a good indicator of a protective immune response. Even though farms may have a high percent of PCV2-positive animals, neutralizing antibodies are present at high levels that may help prevent infection in piglets.