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Utility of an indirect ELISA for Circumvent® PCV compliance monitoring

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Introduction- Porcine circovirus type 2 (PCV2) has emerged as a severe disease, although vaccination has proven to be highly effective.¹ Since individual pig immunity appears important for herd protection, monitoring for vaccination compliance has high value. Background passive maternal antibody and field exposure may prevent interpretation of PCV2 serology.

Methods- Presented are data supporting serological monitoring for vaccination compliance using Circumvent® PCV. This is based on the similarity of baculovirus (BV) constructs containing PCV2 antigens in the vaccine and in an indirect ELISA in use at the Iowa State University Veterinary Diagnostic Laboratory.² This PCV2 Differential ELISA reports BV background titers (called wild type: WT), which are used to calculate final S/P titers and can serve as a compliance marker.³ Pigs were vaccinated per label directions at 3 and 6 weeks of age. Blood was collected at first vaccination and 3 weeks after second vaccination unless otherwise noted. The positive threshold for the WT optical density (OD) was 0.300.

WT OD Over Time- The table below presents WT optical density value profiles generated in two field trials.

<u>Age</u>	<u>Para-meter</u>	<u>Farm A</u>		<u>Farm B</u>	
		<u>Vacc.</u>	<u>Cont.</u>	<u>Vacc.</u>	<u>Cont.</u>
3 wks	WT OD	0.144	0.137	0.103	0.134
	Positive	1/33	0/32	0/12	0/8
6 wks	WT OD	0.309	0.153	0.229	0.161
	Positive	16/34	0/28	1/12	0/8
9 wks	WT OD	0.582	0.172	0.356	0.160
	Positive	32/33	0/28	11/18	0/16
12 wks	WT OD	0.629	0.192	ND	ND
	Positive	33/33	0/28	ND	ND
15 wks	WT OD	0.560	0.236	0.319	0.250
	Positive	34/34	2/28	7/17	4/16
21 wks	WT OD	0.486	0.239	0.474	0.326
	Positive	34/34	2/28	11/15	8/13

The WT OD values in vaccinates were higher in Farm A than Farm B yet more controls became positive in Farm B with age. Notable differences between farms were housing style after 15 weeks of age and PRRSv status in the nursery, whose impact on PCV2 or WT titer responses are unknown.

Serial Evaluation- Four serials, representing vaccine produced at different times, were found to induce similar antibody levels as shown in the following table.

<u>Serial</u>	<u>WT OD</u>		<u>Positive/Tested</u>	
	<u>PreVx</u>	<u>PostVx</u>	<u>PreVx</u>	<u>PostVx</u>
A	0.118	0.538	0/32	26/32
B	0.113	0.552	0/8	7/8
C	0.197	0.563	1/5	5/5
D	0.103	0.664	0/8	8/8
Control	0.112	0.151	0/13	0/13

Impact of Maternal Antibody- Pigs born to sows that had been vaccinated prior to farrowing contained maternal antibodies that appeared to interfere with the WT response as shown in the following table.

<u>Age</u>	<u>Vacc.</u>	<u>WT OD</u>	<u>Positive</u>
3 wks	Pre	0.592	12/15
6 wks	2nd	0.306	4/13
9 wks	Post	0.324	2/11

Conclusion- Measurement of WT antibodies has potential for monitoring Circumvent® PCV vaccination compliance. However, it appears factors such as maternal antibody levels and possibly PRRS status need to be considered when evaluating the results.

References

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