PIG HEALTH TODAY™
NEW IDEAS FROM PIG RESEARCH
ISSUE 3

discoveries

15 seconds

- **Fostera® Gold PCV MH is the first and only PCV2 vaccine with both the PCV2a and PCV2b genotypes.**
- **A large, commercial field trial demonstrated that Fostera Gold PCV MH was also effective against the most prevalent PCV2 genotype circulating in US herds — PCV2d.**
- **Fostera Gold PCV MH provides the broadest protection available against PCV associated disease.**

Large field trial showed Fostera® Gold PCV MH was effective against prevalent PCV2d genotype

A large, commercial field trial conducted with Fostera® Gold PCV MH — the first and only commercial vaccine with porcine circovirus (PCV) genotypes 2a and 2b — showed it was also effective against PCV2d, the most prevalent genotype of the virus circulating among US swine herds.[1]

The field trial was conducted on a Midwest farm with 880 pigs from a high-health herd.[2]

More than 300 pigs in the study received Fostera Gold PCV MH as either one, 2-ml dose at 3 weeks of age or two, 1-ml doses administered 3 weeks apart starting at either 3 days or 3 weeks of age. The results were compared to pigs that received other commercially available PCV2 plus *Mycoplasma hyopneumoniae* (*M. hyo*) vaccines. An unvaccinated group received saline and served as the negative control.

After vaccination, all pigs in the trial were challenged first with *M. hyo*, then with PCV2d 1 week later.

'Real-world' conditions

"We wanted to test the new vaccine's efficacy against *M. hyo* and PCV2d in a way that mimicked disease patterns seen on many farms," said Rick Swalla, DVM, technical services veterinarian for Zoetis. "*M. hyo* and PCV2 disease often occur together and *M. hyo* potentiates PCV2 disease."

An outbreak of swine influenza virus and *Streptococcus suis* at weaning inadvertently compounded the study's real-world approach, he added.

Study results

Investigators considered several factors when they evaluated results.

One was **viremia** — the level of virus in the blood associated with clinical disease. PCV2 viremia was significantly lower ($p < 0.05$) with one- and two-dose regimens of Fostera Gold PCV MH compared to controls, Swalla reported.

continued

"Broader coverage resulting from the vaccine's two genotypes provides additional insurance against the evolving PCV2 virus."

RICK SWALLA, DVM

Immunohistochemistry (IHC), which the veterinarian called "the gold standard for PCV2 diagnosis," demonstrated that PCV2 was detected in 0% of pigs that received two doses of Fostera Gold PCV MH — one at weaning and the other 3 weeks later. This was significantly different ($p < 0.05$) compared to PCV2 in 46% of unvaccinated pigs and in 21% of pigs that received two, 1-ml doses of Circumvent® PCV-M G2 initiated at 3 days of age.

Regardless of vaccination protocol, pigs given Fostera Gold PCV MH had significantly lower ($p < 0.05$) **lung lesion** scores compared to pigs that received one dose of Ingelvac CircoFLEX® plus MycoFLEX® at weaning.

"In fact, pigs that received CircoFLEX plus MycoFLEX had numerically higher lung lesion scores than unvaccinated pigs and pigs in all other vaccine groups," Swalla said.

Only one of the pigs that received Fostera Gold PCV MH had an injection-site reaction, which was negligible, Swalla noted.

Final weight

Most important from an economic standpoint was final weight, he said. By study-day 157, average weight in pigs that received one weaning dose of Fostera Gold PCV MH was 257 pounds, and 254 pounds in pigs that received two doses initiated at weaning.

These results were significantly higher ($p < 0.05$) compared to an average of 242 pounds for unvaccinated controls and numerically better than the average weight of 250 pounds for the Circumvent PCV-M G2 group and 251 pounds for the Inglevac CircoFLEX plus MycoFLEX group.

More insurance

According to 2017 data from Iowa State University's Veterinary Diagnostic Laboratory, PCV2d is the most common genotype in US herds, and PCV2a and PCV2b are the next most prevalent.[3] Commercial PCV2 vaccines that contain a single genotype — either 2a or 2b — help protect against PCV2, including 2d, but coverage is sometimes insufficient, resulting in PCV associated disease such as wasting, leading to poor performance, Swalla said.

Pigs vaccinated with Fostera Gold PCV MH develop antibodies against 2a and 2b. Research shows 2b and 2d are closely related, and the antibodies pigs develop against 2b also recognize 2d.[4]

Swalla noted that antibodies alone cannot fight the virus once it's inside the cell. For that, cell-mediated immunity is needed. MetaStim®, the adjuvant in Fostera Gold PCV MH, is smooth yet stimulates both antibody and a strong cell-mediated immune response.

"Broader coverage resulting from the vaccine's two genotypes provides additional insurance against evolving PCV2 virus," Swalla said. In addition, the vaccine's duration of immunity has been shown to be at least 23 weeks for both PCV and *M. hyo*, which protects most pigs until they reach market weight.

For more information on Fostera Gold PCV MH, contact richard.swalla@zoetis.com or your Zoetis representative.

[1] Personal communication between Darin Madson, PhD, and Rick Swalla, DVM.

[2] Data on file, Study Report No. 16 PRGBIO-01-01, Zoetis LLC.

[3] Personal communication between Darin Madson, PhD, and Rick Swalla, DVM.

[4] Lekcharoensuk P, et al. Epitope mapping of the major capsid protein of type 2 porcine circovirus (PCV2) by using chimeric PCV1 and PCV2. J Virol. 2004 Aug;78(15):8135-8145.

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