

Bulletin

Boehringer Ingelheim Vetmedica, Inc.

TECHNICAL

Efficacy of a Killed and Modified-Live PRRS Vaccine When Used Alone and in Combination in Growing Pigs

Current immune management tools available for control of the PRRSV include *Modified-Live vaccines, Killed Autogenous PRRS vaccines, and Commercial Killed PRRS vaccine*. Use of killed autogenous PRRS vaccines have been reported to provide protection under field conditions. Evaluation of a killed autogenous PRRS product in the reproductive challenge model under controlled conditions suggests little to no benefit (*Osorio et al. 1998*).

This paper summarizes a collaborative study done with Dr. Pat Halbur at Iowa State University to determine if modified-live PRRS vaccine and killed autogenous PRRS vaccine when used in combination provided more benefit than either vaccine alone in a respiratory challenge model. The killed autogenous vaccine was prepared from the challenge strain of PRRS and formulated into an antigen concentrated product.

Study Design and Methods:

Seventy-five three week old PRRSV negative pigs were randomly assigned to 5 treatment groups. Group 1 received 2 doses of killed autogenous vaccine. Group 2 received one dose of modified-live vaccine (*Ingelvac® PRRS MLV*). Group 3 received one dose of modified-live vaccine followed by one dose of killed autogenous vaccine 2 weeks later. Group 4 were challenge controls, and group 5 were strict controls. A summary of the study design and treatment groups is shown in Table 1. All pigs in groups 1 to 4 were challenged with highly virulent PRRS virus (strain SDSU 73) at 9 weeks of age. The challenge isolate was homologous for the killed autogenous vaccine, and heterologous to the PRRS modified-live vaccine (*Ingelvac® PRRS MLV*). Pigs were necropsied 14 days post-challenge, and lungs were collected and scored to assess percent gross lung lesions/pneumonia associated with PRRSV exposure and to assess vaccine efficacy.

Results:

All groups receiving modified-live vaccine (*Ingelvac® PRRS MLV*) had significantly ($P < 0.05$) reduced lung lesions. There was no significant benefit or enhancement noted using the killed autogenous product in combination with modified-live vaccine. There was no significant difference between the non-vaccinated/challenged treatment group, and the killed autogenous vaccinated/challenged treatment group. The efficacy results are summarized in Table 2.

Summary and Key Points:

1. Pigs which received the modified-live vaccine had a statistically significant reduction of lung lesions induced by a heterologous, highly virulent PRRSV challenge.
2. There was no additive benefit using modified-live vaccine and killed autogenous vaccine in combination in the respiratory model.
3. Killed autogenous vaccine alone failed to provide significant reduction in severity of PRRSV-induced pneumonia lesions, even in a homologous challenge model.

Table 1. Summary of the study design

Grp	n=	3wk	6wk	9wk	11 Wk
1	19	Killed	Killed	SDSU 73	Necropsy
2	20	MLV	-	SDSU 73	Necropsy
3	20	MLV	Killed	SDSU 73	Necropsy
4	10	-	-	SDSU 73	Necropsy
5	4	-	-	-	Necropsy

Challenge exposure was 6 weeks post-vaccination

Table 2: Summary of the results of the percent gross lung lesion evaluation post-challenge

Treatment	% Pneumonia	Stats
KV	26%	a
MLV	8%	b
MLV-KV	6%	b
Challenge Control	47%	a
Strict Control	1.5%	b

Like letters are not statistically ($P < 0.05$) different when comparing groups to challenge control group.