A valuable alternative to antibiotics in weanling pigs

by Dirk R. Zandstra, Diamond V Europe, Spanjelaan 12, 9403 DP Assen, The Netherlands.

The use of antibiotics to improve growth and feed utilisation in swine has been banned in the European Union by regulatory measures since January 2006 and there has been political pressure placed on swine producers worldwide to supply pigs grown without antibiotics.

In view of the expected expansion of this trend to the rest of the world, swine producers are seeking more natural alternative strategies to improve the consumers' perception of safe pig products and to maintain animal health and performance status in modern swine production systems.

In recent years, the importance of gut health associated with a stable gut microflora has been demonstrated as essential to maintain animal health status and productivity. Especially in periods of stress, such as weaning, change of feed, or after antibiotic treatments, a stable gut environment is vital to protect the host against pathogenic bacteria.

Nutrition of weanling pigs is still a key topic of interest in swine production, because a good start is critical to the subsequent growth, development and survival of piglets. However, weaning is one of the most dramatic events in the pig's life.

The piglet is exposed to several challenges and the most stressing factor in this transition period is the change from milk to solid feeding. Besides that, the stressed gut and the undeveloped immune system induce subclinical disease and dysfunctional gut resulting in decreased feed intake and utilisation and increased morbidity and mortality.

Because of that, optimal functionality of the gastrointestinal tract is essential for feed digestibility and nutrient absorption in the intestinal tract.

It has been demonstrated that antibiotic growth promoters increase the growth efficiency of swine. In fact, swine producers have experienced an increase in feed per gain after the ban of growth promoters.

Nowadays, with the actual high feed prices, there is a clear need to improve feed conversion efficiency, reduce feed costs and improve growth performance.

Several substances have been claimed to promote a beneficial gut microflora associated with well balanced gut environment and optimal functionality of the tract.

However, in some cases, scientific evidences are inconsistent regarding their efficacy to replace antibiotics and none has been adopted by the industry.

Table 1. Yeast culture effect on post-weaning piglet performance.

	Treatments				
	CTR	AGP	XPCIs	XPCIs+CWP	< P
Bodyweight (kg) Day 0	7.8	7.8	7.8	7.8	-
Bodyweight (kg) Day 35	22.7[a]	23.5[b]	23.3[b]	23.6[b]	0.05
Av. daily gain (kg/d)	427[a]	448[b]	443[b]	450[b]	0.06
Av. daily feed intake (kg/d)	0.63	0.65	0.64	0.65	0.31
Feed conversion ratio	1.51[a]	1.47[b]	1.47[b]	1.47[b]	0.01

A fermented yeast product

Diamond V Yeast Culture has demonstrated to be effective in promoting growth and feed utilisation in piglets. Diamond V is the world's leading company of yeast culture products that has used yeast fermentation biotechnology to manufacture yeast culture products for more than 60 years.

This unique yeast culture is a complementary feedstuff carefully produced by fermenting select liquid and cereal grain ingredients with Saccharomyces cerevisiae yeast under proprietary anaerobic fermentation conditions. This natural feed ingredient contains the fermentation metabolites of yeast cells which help to manage the gastrointestinal tract. Diamond V Yeast Culture promotes a more desirable microbial environment in the small and large intestine to maximise nutrient availability. Besides reducing pathogenic bacteria and stimulating the growth of desir-

Continued on page 8

Continued from page 7
able bacteria in the intestinal tract, recent studies have shown that Diamond V Yeast Culture has a positive impact on swine performance by improving gut health and immunity.

Improving feed conversion

A recent study published in the Journal of Animal Science (Van der Peet-Schwering et al., 2007; 85:3099-3109) has concluded that Diamond V Yeast Culture is a valuable antibiotic alternative in weanling pigs.

Researchers at Wageningen University in The Netherlands have demonstrated that supplementing weanling pigs diets with this yeast culture results in better growth rate and feed efficiency.

This study was conducted to evaluate the effect of a fermented yeast product, Diamond V XPCls, in pig diets on performance and physiological parameters of weanling pigs to determine whether this could replace antibiotic growth promoters such as avilamycin. Besides that, a blend of Diamond V Yeast Culture + a cell wall product (CWP) containing mannan oligosaccharides was evaluated to determine additional benefits to weanling pigs.

This study was performed using 480 weanling pigs for five weeks post-weaning. Piglets were weaned at 27 days of age weighing on average 7.8kg and assigned to one of four treatments:

- CTR (control diet without antibiotic or yeast culture).
- AGP (antibiotic growth promoter diet with 40mg/kg of avilamycin).
- XPCls (Diamond V Yeast Culture diet with 0.125% of Diamond V XPCls).
- XPCls + CWP (modified yeast culture diet with 0.125% of Diamond V XPCls + 0.2% of cell wall product).

Performance of the piglets was similar in piglets that were fed Diamond V Yeast Culture, growth promoter or modified yeast culture (Table 1).

Diamond V Yeast Culture improved body weight with 800g (4%) at 35 days post-weaning over the control, as well as avilamycin and modified yeast culture.

Average daily gain was higher in piglets that were fed the supplemented diets. Diamond V Yeast Culture improved ADG with 20g/day (5%) compared to the control, as well as avilamycin and modified yeast culture. Average daily feed intake was unaffected by dietary treatment.

Therefore, the feed conversion ratio was significantly lower in piglets that were fed Diamond V Yeast Culture or avilamycin compared to piglets that were fed the control diet. It was concluded that Diamond V Yeast Culture can substitute avilamycin with the same effect on weight gain, feed intake or feed conversion.

Conclusion

- The addition of Diamond V Yeast Culture resulted in a higher daily gain, a better feed conversion and a similar daily feed intake.
- Diamond V Yeast Culture is a valuable alternative to antibiotic growth promoters in diets for nursery pigs. Diamond V Yeast Culture and the antimicrobial growth promoter had similar effects on average daily gain and feed efficiency of weanling pigs.
- The addition of cell wall product containing mannan oligosaccharides to a diet containing Diamond V Yeast Culture did not show additional benefits to weanling pigs.
- Diamond V Yeast Culture is a complementary feedstuff that helps provide consistent performance improvement with a positive return on investment in feed efficiency of post weaning piglets. ■