

HOW TO COMBINE PERFORMANCE AND ENVIRONMENTAL CARE? VEVOVITALL®

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Introduction

Ammonia (NH₃) is a well-known gas because of its odour and its toxicity. NH₃ can effect pig health and it has also been identified as one of the risk factors for chronic bronchitis, a work-related disease in pig farmers. The effect of NH₃ on animal performance is controversial, but most of the studies show a numerically negative influence with the typical NH₃ levels found in the commercial pig farms (10 to 25 ppm). NH₃ plays as well a role in the atmospheric pollution (acid rain) and in the eutrophication of water. Animal husbandry in Europe accounts for more than 80% of NH₃ emission and a specific EU Directive (2) requires a 13% reduction of NH₃ release into the environment by 2010 compared to 1990 levels. In pigs, 40 to 50% of the nitrogen intake is excreted via the urine and can turn into ammonia. A reduction in ammonia emission can be achieved by reducing the pH of the urine. Benzoic acid has been recently authorised by the European Union (5) for this purpose (VevoVitall®, DSM Nutritional Products). The Research Institute for Pigs Husbandry in Rosmalen performed studies, which have shown a significant reduction of the average pH of the urine and of the slurry as well as a reduction of ammonia emission (1% of benzoic acid in the diet lead to a 33% reduction of ammonia emission). In the same trials, there was a clear tendency for an improvement of weight gain and feed conversion ratio. A study was set up to better evaluate the influence of benzoic acid (VevoVitall®) on performances.

Material and Methods

The trial was conducted in the fattening house of Zootechnical Centre (K.U.Leuven R&D) and involved 93 animals, Piétrain * Hybrid, 11 weeks old at the start of the trial (average 24 kg). The experimental period was 118 days. The design of the experiment was a 2 treatments x 8 replications with 2 or 3 barrows and 2-3 sows per pen. The treatments were the following: a control with 0% benzoic acid and a 0,5% benzoic acid mixed in the feed. The feed was provided ad libitum in the form of meal. The following performance parameters were evaluated: feed intake, daily weight gain, feed conversion ratio.

Results

The results are presented in table 1. No particular health problems were observed during the trial. All improvements of technical performances have been noted during each phase of the trial. Even during the last phase (84 – 105 kg) one can see a positive trend on daily weight gain and feed conversion ratio.

Discussion

The improvement of performances are in agreement with the results found on fattening pigs (1, 4) as well as the improvement of performances observed by other authors in piglets (3).

An economic simulation is presented in table 2. Even when pig carcass prices are low, the use of VevoVitall® provides a benefit to the economic results.

Table 1: Final body weight, daily growth, daily feed intake and feed conversion ratio corrected for initial body weight.

LSMean +/- standard error. A different letter within a row indicates a statistical difference (P<0.05).

	Control	VevoVitall®
Body weight (kg)	103.8 +1.6 a	105.5 +1.6 a
Daily growth (g/d)	693 +14 a	731 +14 a
Daily feed intake (g/d)	1961 +39 a	1886 +38 a
Feed conversion ratio	2.82 +0.08 b	2.59 +0.08 a

Table 2: Economic simulation (in € / pig):

Carcass price / kg	1,10 € / kg		1,25 € / kg	
	0,0	0,5	0,0	0,5
% VevoVitall®				
Selling price / pig	89.40	90.35	101.59	102.67
Feed costs	46.82	46.04	46.82	46.04
Margin	42.58	44.31	54.77	56.63
Additional margin		+1.73		+1.86

Conclusion

The inclusion of VevoVitall® in growing-fattening pig diets is known to reduce the pH of the pig urine and the ammonia emission in pig houses. This study is showing that VevoVitall® is as well improving pig performances, leading to an economic benefit for the pig breeders.

References

1. den Brok GM et coll. (1999) Research Institute for Pig Husbandry report P 5.7, Jan 1999, ISSN 0922 - 8586
2. Directive of the European Parlement 2001/81/EC
3. Maribo H. et coll (2000) The National Committee for Pig Production, Danish Bacon And Meat Council, Report no.: 490, 23 November 2000
4. van der Peet-Schwering et coll. (1999) Research Institute for Pig Husbandry report P 5.8, Jan 1999, ISSN 0922 - 8586
5. Regulation of the European Commission (CE) No 877/2003