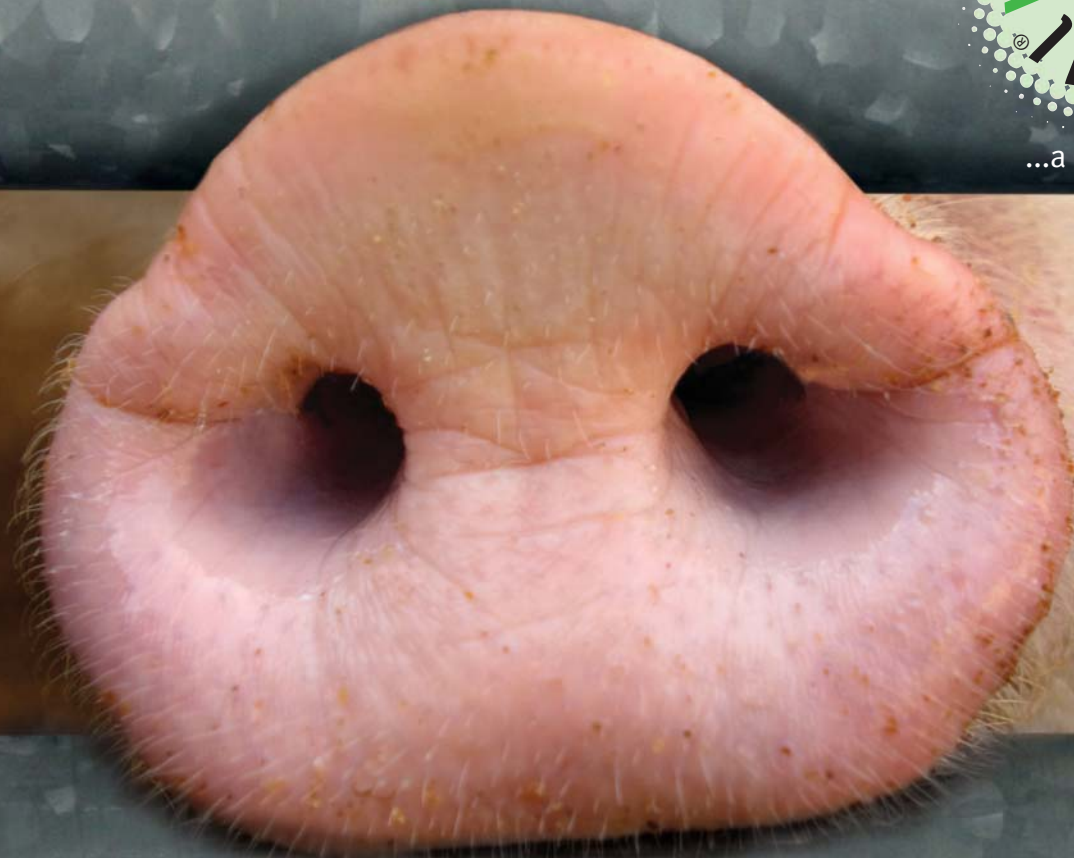




...a DSM Eubiotic



a balanced approach...

VevoVital[®]

delivering superior pig performance

Introduction

VevoVital[®] - solving major challenges in pig production

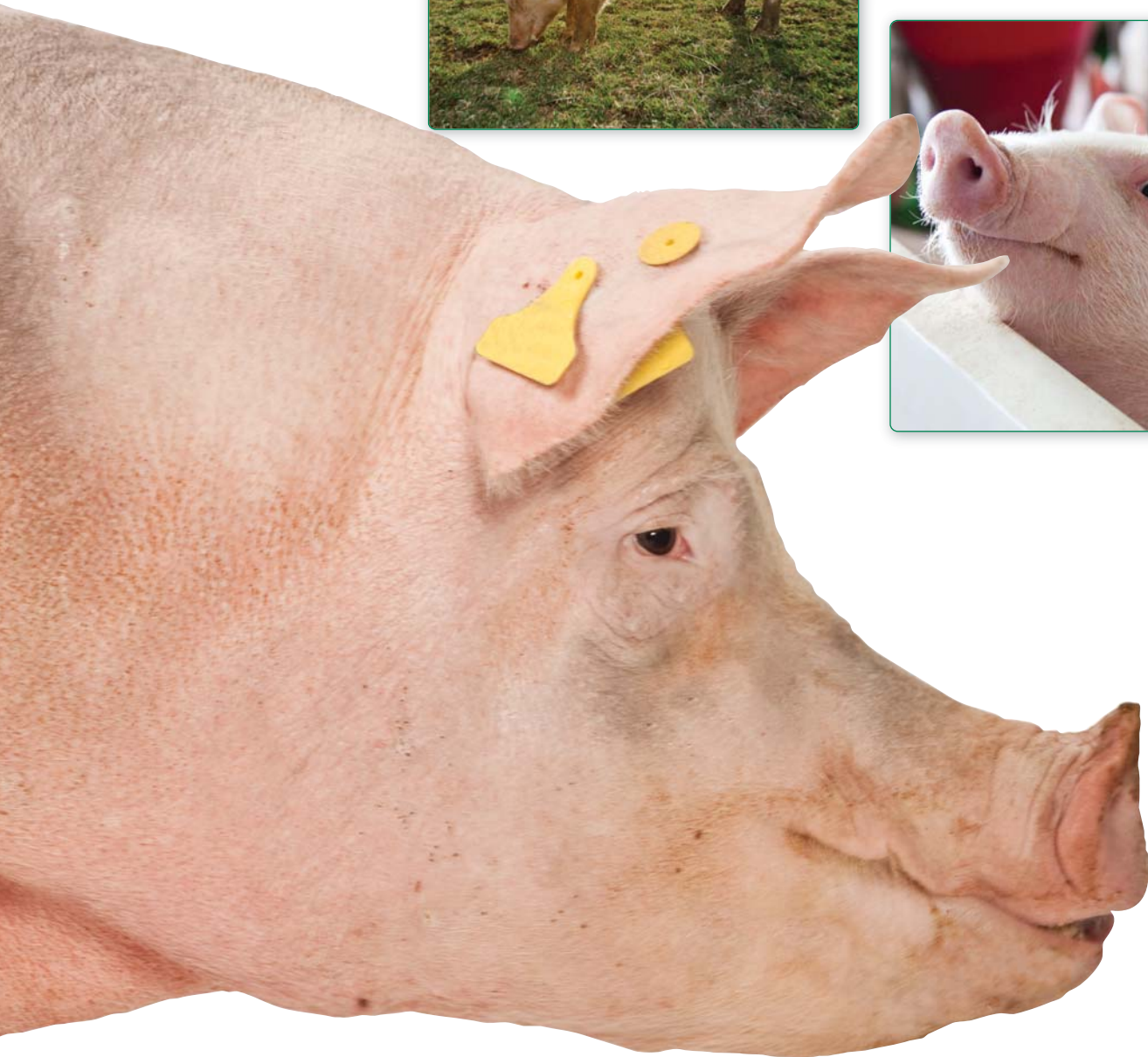
Pig producers face many challenges as they strive to produce finished animals cost-effectively while protecting the environment.



By including VevoVital[®] in diets pig producers can:

- Improve daily liveweight gain and feed conversion
- Reduce ammonia production providing a better environment for staff and pigs
- Reduce the incidence of diarrhoea and medication

The result –
healthier, more profitable pigs



What is VevoVitall®?

VevoVitall® is an ultra-pure source of food grade benzoic acid. Fully traceable with low smell, low corrosion and low caking.

VevoVitall® is an easy to handled organic acid and the only safe source of benzoic acid.

When added to pig diets it acts as a preservative reducing the activity of bacteria, yeasts and moulds. It also moderates the microflora in the gut resulting in more effective digestion and reduced digestive disorders.

Delivering big benefits

Including VevoVitall® is proven to help producers improve the economical and environmental sustainability of their businesses:

The Challenge	VevoVitall® effect
Poor growth rate in pigs	Improves daily weight gain by 5-15% in piglets
Poor feed conversion	Improves FCR in piglets by 2-5%
Higher feed costs	Reduces FCR in growers and fatteners by up to 5%
Low feed intakes	3-10% increase in piglet feed intakes
High incidence of scours and diarrhoea	Up to 90% reduction in diarrhoea
High number of veterinary treatments	Reduced level of medication required
High levels of ammonia in pig houses	Up to 35% reduction in ammonia emissions

Proven effects

The benefits of VevoVitall® have been proven in extensive trials and studies.

Bacteria	pH	MIC* (kg/t)	Yeasts	pH	MIC* (kg/t)
<i>Pseudomonas</i> spp	6.0	0.20 – 0.48	Sporogen yeast	2.6 – 4.5	0.02 – 0.10
<i>Micrococcus</i> spp	5.5 – 5.6	0.05 – 0.10	Non sporogen yeast	4.0 – 5.0	0.07 – 0.15
<i>Streptococcus</i> spp	5.2 – 5.6	0.20 – 0.40			
<i>Escherichia coli</i>	5.2 – 5.6	0.05 – 0.12	Moulds	pH	MIC* (kg/t)
<i>Salmonella</i> spp	5.1 – 6.5	0.50 – 1.00	<i>Rhizopus</i> spp	3.0 – 5.5	0.10 – 5.00
			<i>Aspergillus</i> spp	3.0 – 5.0	0.02 – 0.30
			<i>Penicillium</i> spp	2.6 – 6.0	0.03 – 10.0

*MIC Minimal inhibitory concentration; According to: Gould 1989 and Seon 2005

Preservation effects

Benzoic acid is a long-established preservative in the feed industry. It is particularly effective against fungi and yeasts.

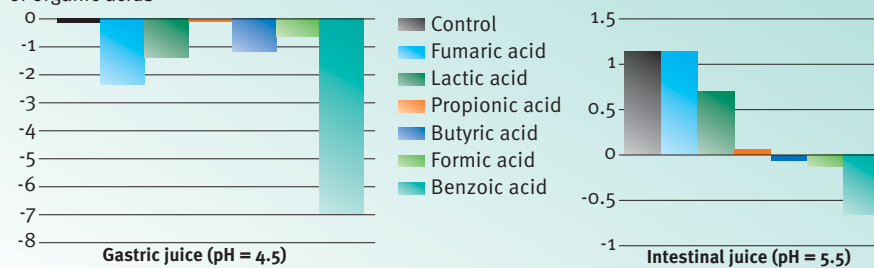
Better feed preservation can help improve intakes and performance.

Benzoic acid helps reduce the numbers of the pathogenic bacteria responsible for digestive disorders. It is particularly effective in reducing the growth and development of *E. coli* and *Salmonella*.

A lower pathogenic load leads to healthier, faster growing pigs.

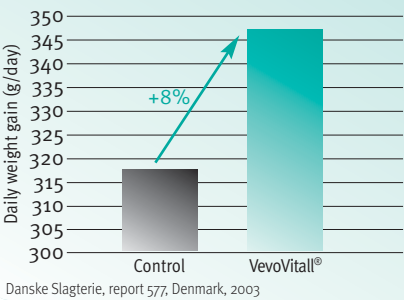
A series of trials has shown a decrease in feed conversion when VevoVitall® is used up to slaughter.

In vitro specific growth or inhibition of *E. coli* (/hour) as function of different concentrations of organic acids

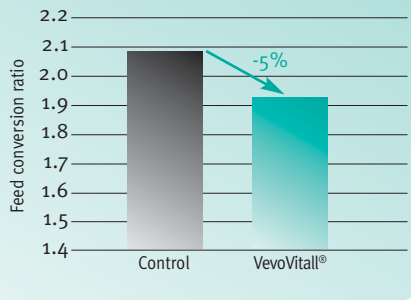


Adapted from Knarreborg et al. 2002

Location, year	VevoVital [®] benefit
Denmark, 2000	reduction of the treatment frequency by 49%
Germany, 2001	3 times less days with diarrhoea
UK, 2005	10 times less medication for scour

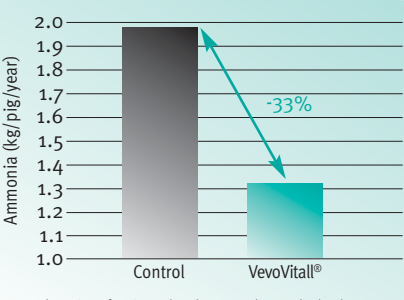


Danske Slagterier, report 577, Denmark, 2003

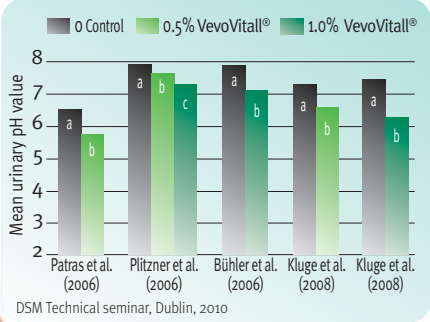


Treatment	1 Control (0)	2 VevoVital (0.25%)	3 VevoVital (0.50%)	4 VevoVital (0.75%)	5 Acid comb. (0.50%)
Number of piglets	12	11	11	12	12
Initial weight (kg)	8.52	8.61	8.62	8.53	8.51
Daily weight gain (g)	287a	293ab	315ab	326b	287a
Index (%)	100.0	102.1	109.8	113.6	100.0
Daily feed intake (g)	468	467	498	506	462
Feed/gain ratio	1.63a	1.59a	1.58ab	1.53b	1.60a
Index (%)	100.0	97.5	96.9	93.9	98.2

Netherlands, CCL, 2001, reference Piglet-NL-2001-CCL



Research Institute for Pig Husbandry, Rosmalen, Netherlands, 1999



Reduction in scours and medication

Trials show that herds using VevoVital[®] enjoy a reduction in digestive disorders and a saving in the medication required. Lower levels of digestive disorders mean healthier, faster growing pigs.

Better performance

Trials in several countries show a consistent improvement in both daily liveweight gain and feed conversion efficiency. Studies also show a clear benefit from including higher levels of VevoVital[®] in piglet diets. Both feed conversion and weight gain improved as the level of VevoVital[®] is increased up to 0.75%. Faster growing pigs are more profitable.

Reduced ammonia emissions

By reducing the pH of urine, benzoic acid resulted in lower ammonia emissions of up to 35%, leading to a healthier environment. Better air quality means more pleasant working conditions.



VevoVitall[®] - delivers better returns

Supplementing diets VevoVitall[®] leads to healthier, better performing pigs and this means better returns and improved cash flow.

Increased returns

In piglets (to age)	€0.25-1.25 per piglet
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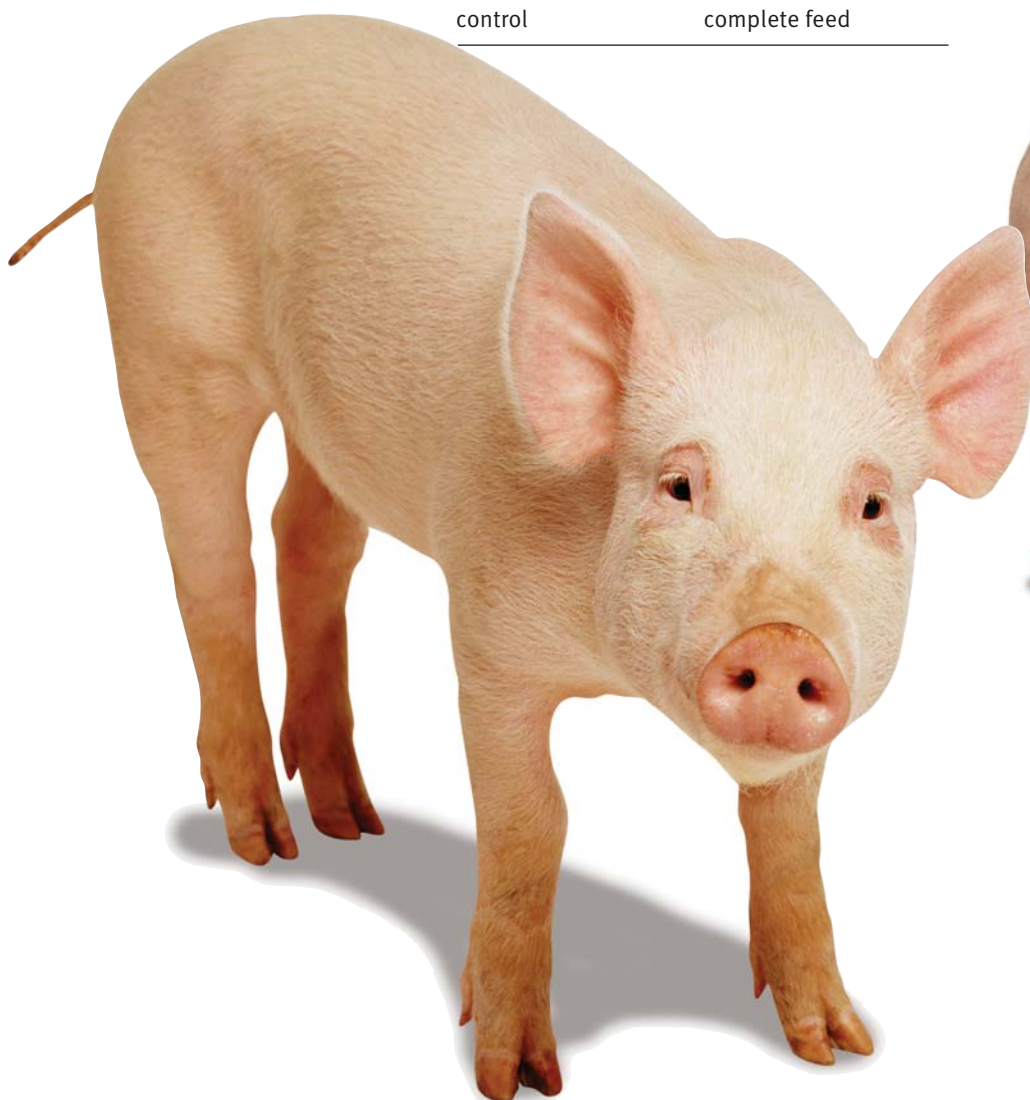
In growing and finishing pigs	€1.0-3.0 per pig
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Recommended inclusion rates

Weaned piglets	5kg VevoVitall [®] /ton complete feed
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Growing, finishing pigs	5kg VevoVitall [®] /ton complete feed
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Optimum ammonia control	10kg/ton of complete feed
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