



## EggsTend 88 in weaner feed

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### Abstract

The addition of EggsTend 88 to weaner feed was investigated in one herd. The product consists of spray-dried whole eggs laid by SPF hens immunised with isolated E. coli strains from pigs. The product was mixed with 50% dextrose to make it soluble in water. EggsTend 88 was added to diet 1, which was used the first 14 days post-weaning. The addition of EggsTend 88 was compared with a control group where the feed contained 2500 ppm zinc prescribed by the vet (subsequently called 2500 ppm zinc) and a control group with no additional zinc the first 14 days post-weaning. All pigs in the trial were given the same feed from 7 to 12 weeks of age. All diets were produced as pelleted basic diets, were then ground, and finally the products were added.

The aim of the trial was to document the effect of the products on weaner productivity. The trial comprised 28 blocks, 15 pigs/group, and the three diets listed below (used the first two weeks post-weaning):

Group 1:	Control + 2500 ppm zinc prescribed by the vet
Group 2:	Control with no additional zinc
Group 3:	Control including 0.4% EggsTend 88 and with no additional zinc

EggsTend 88 is produced by the Danish company Scanimal Health and was mixed in ground pelleted feed that was not heat-treated as EggsTend 88 does not tolerate heating above 70°C. Feed analyses revealed good correspondence between the calculated content and the analysed content of nutrients.

Based on the production results obtained in the trial, the production value was calculated with the same price for all three groups. The production value is an expression of all productivity figures in one value.

The use of EggsTend 88 in weaner feed the first 14 days post-weaning did not improve the productivity and health of the pigs compared with the control group where the pigs were not given 2500 ppm zinc in the feed. However, the pigs given 2500 ppm zinc the first 14 days post-weaning had a significantly better productivity and a lower frequency of treatments for diarrhoea compared with the pigs that were not given additional zinc in the feed. There was a high level of health in this trial.

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## Background

The Danish company Scanimal Health has required documentation for the effect on weaner productivity of EggsTend 88. The product consists of spray-dried whole eggs laid by SPF hens immunised with isolated *E. coli* strains from pigs, and was mixed with 50% dextrose to make it soluble in water.

The aim was to investigate the effect of EggsTend 88 from Scanimal Health in weaner diets with and without the inclusion of 2500 ppm zinc. The effect was measured on the production results as the primary parameter calculated on the basis of daily gain, feed intake and feed conversion. The frequency of diarrhoea treatments and the mortality rate were recorded as secondary parameters.

## Materials and method

The trial was conducted in one herd with 112 pens available divided among five sections of varying sizes. In the individual sections, the pens were evenly located on both sides of the inspection alley. All pens had solid floor, a dung alley, and measured 1.2 m x 2.8 m, including the dung alley. Each pen had covered creep areas with insulating floor. Straw and wood chips were used as bedding in the pens. Each pen had one feeder with two feeding points and one drinking bowl. The bowl was located in the dung alley.

On average, the pigs weighed 8.8 kg upon transfer to the trial and 31.9 kg at the end of the trial.

## Groups

The trial comprised three groups as described in table 1 below.

Group	1	2	3
Company	-	-	Scanimal Health
Product	-	-	EggsTend 88
Diet 1 (weeks 5-7)	Control + 2500 ppm zinc prescribed by the vet	Control	Control + 0.4% EggsTend 88 without zinc prescribed by the vet
Diet 2 (weeks 7-12)	Control	Control	Control

## Blocks

A trial unit consisted of a pen of approx. 7 pigs. Each treatment comprised 28 pens (corresponding to 28 blocks), ie. approx. 196 pigs per group. Upon transfer to the trial, the pigs were distributed in the pens according to weight to obtain an identical transfer weight within each of the three pens constituting a block.

## Feed

The composition of the diets and a description of EggsTend 88 are shown in Appendix 1. The trial diet was produced at Aarhusegnens Andel. All diets were produced as pelleted basic diets, were then ground and finally the products were added. Diet 1 was produced as a basic diet (group 2) that was subsequently ground and then 2500 ppm zinc (group 1) or 0.4% EggsTend 88 (group 3) were added, respectively. From day 15 to day 22, the pigs gradually switched to diet 2. EggsTend 88 and additional zinc were supplied only for the first 14 days post-weaning; the diets used during the gradual switch to diet 2 did not contain either of the products. The weaners were fed ad lib for the entire trial period, ie. they had access to feed and water all day.

## Recordings

The following data were recorded in the trial period: daily gain, feed intake, treatments for disease, and mortality.

All data were recorded at pen level. The pigs were weighed upon transfer to the trial, when switching diets two weeks post-weaning (intermediate weighing) and at the end of the trial six weeks after transfer. The

amount of feed used was also recorded at these three points during the trial. Furthermore, the mortality rate and the frequency of treatments for diarrhoea and other diseases were recorded.

### **Production value**

The production value is based on an average of the weaner prices of the last five years (September 2001 – September 2006) and was calculated as: (kg gain x DKK per kg gain) - (number of analysed FUgp x DKK per FUgp). The production value was calculated for each pen for the entire trial period. The value of gain (DKK 5.82 per kg) was based on the pigs' average weight at the start and end of the trial. The average prices of the last five years were:

Price of a 7 kg pig:	DKK 200 per pig, ± DKK 8.50 / kg
Price of a 30 kg pig:	DKK 430 per pig, ± DKK 4.90 / kg (15-30 kg), ± DKK 5.06 / kg (30-40 kg)
Diet 1:	DKK 2.72 / FUgp
Diet 2:	DKK 1.47 / FUgp

It was not possible to calculate the actual production value including the price of the product as Scanimal Health did not state the price of EggsTend 88.

### **Statistics**

The daily gain and feed conversion for each block were used for calculating the production value (PV) per pig. The calculation of the feed conversion included the analysed content of FUgp for each diet. The production value was tested as the primary parameter. Mortality and treatments for diarrhoea were included as secondary parameters. Data were analysed for normal distribution and prevalence of outliers, and were subjected to an analysis of variance in SAS under the GLM procedure. Significant differences are stated at 5 per cent level adjusted for three comparisons in pair (groups 2 and 3 with group 1, and groups 2 and 3 with each other) with a Bonferroni t-test. Since the results only showed a significant effect on the production value, the individual production traits (feed intake, daily gain and feed conversion) were also subjected to analysis with the same statistical model.

## **Results and discussion**

### **Feed**

The calculated and the analysed content of nutrients corresponded well with each other. The analysis results are shown in Appendix 2.

### **Productivity and production value**

The production data are shown in table 2. The results are collected in a production value that, using fixed prices and the same feed prices, weighs up the production data.

As can be seen in table 2, the production value was significantly lower in groups 2 and 3 compared with group 1, which was due to a significantly lower daily gain and feed intake in the entire trial period.

<b>Table 2. Production results (weight interval: 8.8-31.9 kg) (LS means)</b>			
Group	1	2	3
Blocks	28	28	28
<b>0-2 weeks post-weaning</b>			
Daily feed intake, FUgp/pig	0.45	0.37	0.36
Daily gain, g	297	219	207
Feed conversion, FUgp/kg gain	1.56	1.84	1.85
<b>2-6 weeks post-weaning</b>			
Daily feed intake, FUgp/pig	1.23	1.16	1.17
Daily gain, g	708	673	676
Feed conversion, FUgp/kg gain	1.74	1.73	1.73
<b>The entire trial period (0-6 weeks)</b>			
Daily feed intake, FUgp/pig	0.95 <sup>a</sup>	0.88 <sup>b</sup>	0.88 <sup>b</sup>
Daily gain, g	563 <sup>a</sup>	511 <sup>b</sup>	508 <sup>b</sup>
Feed conversion, FUgp/kg gain	1.69	1.73	1.73
<b>Production value</b>			
DKK/pig	72.7 <sup>a</sup>	66.0 <sup>b</sup>	66.6 <sup>b</sup>
Index	100	91	92
a,b: Different letters denote significant differences, P<0.05. There must be a minimum difference of DKK 4.1/pig or 6 index points between the groups in order for the difference to be significant.			

### Health

The frequency of treatments for diarrhoea in the three groups is shown in table 3. There were significantly more treatments for diarrhoea in group 3 compared with group 1. There was also a tendency to more treatments for diarrhoea in group 2 compared with group 1. The majority of the treatments took place during the first two weeks post-weaning. One day of treatment costs approx. DKK 1 per pig. This is not included in the production value.

There were no differences in mortality or the number of pigs moved to a hospital pen. Mortality averaged 0.9% and 2.8% were moved from the trial to a hospital pen.

Generally, the level of health was very high in this trial.

<b>Table 3. Treatments for diarrhoea (LS means)</b>			
Group	1	2	3
Treatments for diarrhoea, days/pig			
0-2 weeks post-transfer	0.41	1.59	1.85
2-6 weeks post-transfer	0.11	0.26	0.19
The entire period	0.51 <sup>a</sup>	1.84 <sup>ab</sup>	2.04 <sup>b</sup>
a, b Different letters denote significant differences, P<0.0167			
* Tendency to increased treatment frequency compared with control (P=0.06)			

### Conclusion

The use of EggsTend 88 did not improve the pigs' productivity and health compared with a control group where the pigs were not given 2500 ppm zinc in the feed the first 14 days post-weaning. However, the pigs given 2500 ppm zinc in the feed the first 14 days post-weaning had a significantly higher productivity and a lower frequency of treatments for diarrhoea compared with the pigs that were not given additional zinc in the feed.

### References

Nutrient standards, 13<sup>th</sup> edition, May 2006.

### Participants

Technician Jens Ove Hansen

Statistician Jens Vinther

Station manager Poul Hansen

## Appendix 1 – Composition of ingredients in the trial feed

### Diet 1, %

Group	1, 2 & 3 – basic diet
Wheat	41.19
Barley	20.00
Anti-gene free soy protein, HP300	5.00
HP soybean meal, dehulled	8.00
Potato protein, Protastar	3.00
Dried whey / Perlac	6.00
Fish meal, regular	7.37
Vegetable fat (Scanfedt S)	4.00
Molasses	2.00
Mono calcium phosphate, MCP 22.7%	1.07
Feed lime	0.72
Feed salt	0.32
L Lysine hydro chloride (98.5%)	0.37
DL Methionine 100	0.09
L Threonine (98.5%)	0.09
L Tryptophan 15	0.34
AaA Vit. Gysse without aroma	0.35
Vitamin E 25,000	0.09

### Diet 2, %

Group	1, 2 & 3 – basic diet
Wheat	54.11
Barley	15.00
HP soybean meal, dehulled	16.91
Potato protein	2.03
Fish meal, regular	4.00
Vegetable fat (Scanfedt S)	2.79
Molasses	1.50
Feed lime	1.40
Mono calcium phosphate, MCP 22.7%	0.78
Feed salt	0.31
L Lysine hydro chloride (98.5%)	0.36
DL Methionine 100	0.08
L Threonine (98.5%)	0.09
L Tryptophan 15	0.18
AaA Vit. Gysse without aroma	0.26
Vitamin E 25,000	0.20

## Appendix 2 – Calculated and analysed content of nutrients

### Diet 1

Group	1, 2 & 3 – basic diet	
	Analysis	Guarantee
Crude protein, % <sup>1</sup>	21.9	21.6
Crude fat, % <sup>1</sup>	6.6	6.6
Ashes, % <sup>1</sup>	5.5	6.2
Water, % <sup>1</sup>	10.2	10.1
FUgp/100 kg <sup>1</sup>	122	121
Calcium, g/kg <sup>2</sup>	9.3	8.5
Phosphorus, g/kg <sup>2</sup>	7.5	7.3
Lysine, g/kg <sup>3</sup>	15.1	15.2
Methionine, g/kg <sup>3</sup>	4.9	4.9
Cystine, g/kg <sup>3</sup>	3.7	3.4
Met + Cyst, g/kg <sup>3</sup>	8.6	8.3
Threonine, g/kg <sup>3</sup>	9.6	9.4
1) Average of eight analyses 2) Average of four analyses 3) Average of six analyses		

### Diet 2

Group	1, 2 & 3 – basic diet	
	Analysis	Guarantee
Crude protein, % <sup>1</sup>	20.0	20.0
Crude fat, % <sup>1</sup>	5.0	5.1
Ashes, % <sup>1</sup>	5.0	5.9
Water, % <sup>1</sup>	10.4	10.9
FUgp/100 kg <sup>1</sup>	115	116
Calcium, g/kg <sup>2</sup>	8.5	9.3
Phosphorus, g/kg <sup>2</sup>	6.1	6.0
Lysine, g/kg <sup>1</sup>	13.6	13.3
Methionine, g/kg <sup>1</sup>	4.2	4.1
Cystine, g/kg <sup>1</sup>	3.6	3.3
Met + Cyst, g/kg <sup>1</sup>	7.8	7.5
Threonine, g/kg <sup>1</sup>	8.6	8.3
1) Average of four analyses 2) Average of three analyses		

## Product information supplied by Scanimal Health

<b>Product</b>	<b>EggsTend 88</b>
Supplier	Scanimal Health ApS Klokkestøbervej 2 DK-9490 Pandrup Denmark Tel.: +45 9820 4243 Fax: +45 9820 4286 Contact person: Gunnar Pedersen Tel.: +45 9820 4243 E-mail: <a href="mailto:gp@scanimal.dk">gp@scanimal.dk</a>
Content	EggsTend 88 consists of spray-dried whole eggs laid by SPF hens immunised with isolated E. coli strains from pigs. The product was mixed with 50% dextrose to make it soluble in water.  The product does not tolerate heating above 70°C.
Price	Scanimal Health did not state the price of the product.