

# Effect of Egg powder on performance of broilers

Research carried out by



Feed Innovation Services BV,  
Wageningen,  
The Netherlands

for  
Schaffelaarbos BV,  
Barneveld,  
The Netherlands

October, 2007

## Project team:

*Feed Innovation Services*

Dr. ir. Henriëtte Grooten (editor)

Ing. Anke Hitman (editor)

Ir. ing. Willem Smink (editor)

Prof. dr. ir. Anton Beynen (supervisor)

- *Professor of Veterinary Nutrition* -

## **Contents**

Introduction	4
1 Materials and methods	5
2 Results	8
2.1 Body weight and growth rate	8
2.2 Feed intake and feed conversion	9
2.3 Water intake	10
2.4 Mortality	10
Conclusions	11
References	12



## **Introduction**

The goal of the present study is to study the effect of a practical dosage of Egg powder on performance of broilers.

## 1 Materials and methods

### Birds and housing

A number of 128 one-day old female broilers (Ross 308) are purchased from the hatchery. On day of arrival, they are wing-banded, weighed and randomly housed in wire-floor, suspended cages. Each cage is provided with thick foil and litter.

Continuous lighting is provided throughout the experiment. The temperature in the cage at arrival is 32°C and is decreased to ambient temperatures during the experiment.

### Diets

Two different basal diets are produced for this experiment by Research Diet Services BV in Wijk bij Duurstede, The Netherlands: a starter diet (week 1 – 2) and a grower diet (week 3 – 4). The composition of both basal diets is presented in Table 1.

### Dietary treatments and replicates

The broiler experiment consisted of 2 different dietary treatments:

#### *Treatment A (= Negative control group):*

broilers receive the basal starter and grower/finisher diet without antibiotic growth promoters;

#### *Treatment B (= Egg powder group):*

as treatment A but supplemented with 5% Egg powder, which is a practical dosage;

Feed and water were available *ad libitum*.

The total experiment consisted of 16 cages. The experiment started with 8 birds per cage during the starter period. On day 21 of the experiment, 2 birds per cage are removed *at random* from the trial.

**Table 1: Composition of the basal starter and grower diet (%).**

<i>Ingredient</i>	<i>Starter diet (negative group)</i>	<i>Starter diet (Egg powder group)</i>	<i>Grower diet (negative group)</i>	<i>Grower diet (negative group)</i>
Egg powder		5.0000		5.000
Premix (Ca 0 g/kg)	0.5000	0.5000	0.5000	0.5000
Salt	0.2047	0.1882	0.2043	0.2041
Sodium bicarbonate	0.2552	0.1790	0.2209	0.1139
Monocal	1.1225	0.9897	0.4558	0.3056
Chalk	1.4672	1.5119	1.0764	1.1206
DI-methionine 99 %	0.2835	0.2198	0.2448	0.1522
L-lysine HCL 98.5 %	0.1724	0.0491	0.1715	
L-theorine 98%	0.0797	0.0040	0.0789	
Maize	30.0000	30.0000	15.0000	17.0000
Maize glutenfodder (RE < 200)				0.7485
Barley			3.8428	
Wheat	25.0000	25.0000	35.0000	35.000
Peas	0.7428	1.4391	10.0000	10.000
Soya hipro	35.1204	32.3232	25.1366	24.2667
Soya oil	3.2915	1.3051	2.8580	0.7941
Nathupos 5000 FTU/g BRO	0.0100	0.0100	0.0100	0.0100
Palm oil	1.7500	1.2809	5.2000	4.7842
<i>Analysis</i>				
Crude Protein	224.7332	235.0000	200.0000	216.2334
Crude Fat	71.5605	66.6663	96.8565	92.3946
Crude Fiber	25.6370	24.9991	27.8169	26.7224
Starch	357.5585	358.9721	376.7890	370.5894
Ca	9.6000	9.6000	6.8000	6.8000
P	6.3671	6.3110	4.6610	4.6481
ME broiler	2,850.0000	2,850.0000	3,000.0000	3,000.0000
dig.Lys. poultry	11.6000	11.6000	10.3000	10.3000
dig Met poultry	5.7000	5.7000	4.8895	4.7000
dig M+C poultry	8.6016	9.3849	7.5000	8.1713
dig Tryp poultry	2.3548	2.5598	2.0315	2.3117
dig Thre poultry	7.7000	7.7000	6.7000	6.9212
dig Isol poultry	8.3279	9.1150	7.1561	8.2424
Pav poultry	4.4000	4.4000	3.0909	3.0909
Na	1.6000	1.6000	1.5000	1.5000
K	9.9761	9.6870	8.7738	8.8173
Cl	2.0000	2.0000	2.0000	2.0000
dig VAL poultry	8.9000	9.9243	7.7606	9.0794
C 14:0		0.1829		0.5113
C 16:0		12.6000		25.7000
C 18:0		2.5333		3.9921
C 18:1		19.9940		31.8028
C 18:2	28.2791	21.4144	27.7928	20.9375
P-av/-dig fytase	0.8000	0.8000	0.8000	0.8000
Fytase	500.0000	500.0000	500.0000	500.0000
Ca fytase	1.0000	1.0000	1.0000	1.0000
Ca / Pav	218.1818	218.1818	220.0000	220.0000
C 18 / Crud	39.5177	32.1218	28.6948	22.6610

### Measurements

Birds are weighed individually on day of arrival and subsequently on days 8, 15, 21 and 28. Feed intake is measured per cage on a weekly basis. Feed intake per broiler is calculated as feed intake per cage divided by number of broiler days. Mortality is registered on a daily basis, but rates are only calculated for the total period.

### Statistical analysis

All data for each variable are subjected to an one-way analysis, followed by a LSMeans Contrast test in which the dietary treatment was the independent factor with the statistical program SPSS. The level of statistical significance for contrasts is set at  $P < 0.05$ . This is carried out when the statistical level of the model is  $P < 0.1$ .

## 2 Results

### 2.1 Body weight and growth rate

The average body weight of the broilers are presented in Table 2. After day 15 the broilers from the Egg powder group weighed more compared to the broilers from the negative group (with a significance of  $< 0.1$ ).

**Table 2: Average body weight (g) of broilers in two dietary different treatment groups.**

	Negative	Egg powder	Significance
Starter period			
Day 1	45.91	45.72	0.762
Day 8	167.90	167.58	0.938
Day 15	395.97	418.36	0.067
Grower period			
Day 22	726.29	760.82	0.076
Day 28	1,201.78	1,250.22	0.098

The results of the average growth rate, presented in Table 3, show that the broilers of the Egg powder group grew faster than the broilers of the negative group during the experiment, but this is not significant.

**Table 3: Average growth rate (g/d) of broilers in two different dietary treatment groups.**

	Negative	Egg powder	Significance
Starter period			
Week 1+2	25.0	26.6	0.060
Grower period			
Week 3+4	61.8	63.5	0.243
Total period			
Week 1-4	41.2	42.4	0.322

## 2.2 Feed intake and feed conversion

Daily feed intake per broiler is calculated as weekly feed intake per cage divided by so-called 'broiler days', which is the number of broilers per cage times the number of days corrected for drop outs. Results of the calculated feed intake of the broilers in the starter, the grower and total period for all dietary treatments are presented in Table 4. The feed intake from the broilers from the negative group is higher compared to the Egg powder group, but this is not significant.

**Table 4: Calculated daily feed intake (g) per broiler in two different treatment groups.**

	Negative	Egg powder	Significance
Starter period Week 1+2	35.7	34.5	0.426
Grower period Week 3+4	107.9	107.1	0.825
Total period Week 1-4	71.8	70.8	0.641

Table 5 gives the results of the feed conversion of broilers from the different dietary treatments during the starter, grower and total period. The feed conversion from the Egg powder group is significantly lower during the total period compared to the negative group. This is also seen in the other periods, but those results are not significant.

**Table 5: Feed conversion of broilers in two different dietary treatment groups.**

	Negative	Egg powder	Significance
Starter period Week 1+2	1.47	1.39	0.431
Grower period Week 3+4	1.74	1.72	0.376
Total period Week 1-4	1.65	1.59	0.014

## 2.3 Water intake

The water intake is measured 2 times in the grower period, namely during day 24 and 27 and during day 21 en 24. These results are presented in Table 6. The broilers from the Egg powder group have a higher water intake compared to the broilers from the negative group, but those results are not significant.

**Table 6: Average water intake (g/d) per broiler in two different dietary treatment groups.**

	Negative	Egg powder	Significance
Day 16-18	153	160	0.258
Day 21-24	197	215	0.146

## 2.4 Mortality

During the experimental trial mortality of the broilers was registered on a daily basis. These absolute numbers can not be compared statistically between the dietary groups and therefore number of broiler days is calculated also; the results are presented in Table 7. The mortality was the same for both groups and the broiler days were nearly the same.

**Table 7: Mortality and number of broiler days in two different dietary treatment groups.**

	Negative	Egg powder	Significance
Mortality (%)	4.69 %	4.69%	-
Broiler days	197	194	0.609

## **Conclusions**

The present study was undertaken in order to test the effect of Egg powder on performances of broilers.

Supplementation of broiler diets with Egg powder caused:

- an increased body weight gain ( $P < 0,1$ );
- an increased average growth rate (N.S.);
- a decreased feed intake (N.S.);
- a decreased feed conversion (N.S.);
- an increased water intake (N.S.);
- no difference in % mortality;
- less difference in number of broiler days (N.S.).

Based on the results of the present trial it can be concluded that Egg powder seems to improve the performance of broilers, but there is more research needed to get more significant results.



## References