

The Impact of Dietary Supplementation with an *Aspergillus oryzae*-derived Postbiotic on the Productive Performance of Laying Hens Under Commercial Conditions from 50 to 73 Weeks of Age.

Study at the Bayerische Landesanstalt für Landwirtschaft (LfL)

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- AO-Biotics® EQE reduced mortality
- AO-Biotics® EQE improved the percentage of sellable eggs.
- AO-Biotics® EQE improved the economics.

SUMMARY

DOSE OF AO-BIOTICS® EQE USED
50 g/metric ton of feed

Supplementation with **AO-Biotics® EQE** reduced the mortality and improved the percentage of sellable eggs in the flocks.

VALUE

The inclusion of **AO-Biotics® EQE** in the nutritional program for laying hens contributes to increasing egg quality, improving the flock's productivity and the producer's rentability.

PROTOCOL

Location:

- Kitzingen, Germany

Duration:

- The impact of **AO-Biotics® EQE** was evaluated for 23 weeks, beginning the evaluation at week 50 of age.

Animals:

- Approximately 1.200 laying hens were distributed in 12 boxes (100 hens per box, 6 boxes per treatment)
- Lohmann Brown-Classic

Treatments:

- Control group without **AO-Biotics® EQE**
- Treatment group with the same diet as Control but supplemented with **AO-Biotics® EQE** at 50 g/ton of feed

Trial Design:

- Laying hens were fed the same diet. Control boxes received the control diet, whereas the other boxes received the control diet supplemented with 50 g of **AO-Biotics® EQE**/metric ton of feed.

Data Collection:

Hen production:

- Egg production (Laying rate)
- Feed intake
- Feed conversion ratio
- Mortality

Egg quality:

- Egg weight
- Number of eggs laid
- Egg grading
- Eggshell resistance

RESULTS

The Inclusion of **AO-Biotics® EQE** in the diet from 50 to 73 weeks of age reduced the mortality of the flocks by 24% (6.56 % vs 8.60 % for the **AO-Biotics® EQE** and the Control Group respectively; **Figure 1**).

AO-Biotics® EQE showed important improvements mainly from 50 to 70 weeks of age (**Table 2**), where the inclusion of **AO-Biotics® EQE**:

- Increased the percentage of sellable eggs by 1 % (**Figures 2**). This impact was related to an improvement observed from 50 to 70 weeks of age in the percentage of M-type eggs by 13 % compared to the control group.

Impact of including **AO-Biotics® EQE** improved the economics showing a ROI of 13:1 (**Table 3**)

Table 1. Impact of AO-Biotics® EQE at 50 g/ton of feed of laying hens from 50 to 73 weeks of age on performance and egg quality of the hen.

50-73 Weeks of Age	Control	EQE	SEM	Treatment	P-value Treatment x week	Difference
Hen production						
Egg production, % / week	83.8	82.6	0.9918	0.42	0.34	-1%
Feed intake, g/d	139	135	1.720	0.155	< 0.001	-3%
Egg mass, g	57.2	56.0	0.668	0.24	0.22	-2%
Feed conversion ratio, g:g	2.44	2.42	0.0448	0.79	< 0.001	-1%
Cumulative mortality, %	8.60	6.56	1.710	0.42	-	-24%
Egg quality traits						
Egg weight, g/egg/d	68.3	67.8	0.242	0.23	0.22	-1%
Laid eggs, n	5.87	5.78	0.0694	0.42	0.34	-1%
Cumulative laid eggs, n	135	133	-	-	-	-1%
Sellable eggs, %	94.2	94.4	0.673	0.80	0.64	0.3%
Discarded eggs						
Cracked eggs, % / week	2.22	2.35	0.268	0.73	0.99	
Dirty eggs, % / week	3.30	3.02	0.513	0.71	0.24	
Bloody eggs, % / week	0.29	0.19	0.0942	0.46	0.25	
Total discarded eggs, % / week	5.81	5.57	0.673	0.8032	0.635	-4%
Eggshell resistance, N	45.7	45.4	0.369	0.62	0.40	
Eggs' Grading, % / week						
XL	18.3	16.3	0.9805	0.18	0.17	-11%
L	64.0	64.9	1.102	0.58	0.143	1%
M	11.9	13.17	1.583	0.57	0.017	11%
S	0.06	0.11	0.037	0.38	0.329	75%

SEM refers to the standard error of the mean.

RESULTS

Table 2. Impact of AO-Biotics® EQE at 50 g/ton of feed of laying hens from 50 to 70 weeks of age on performance and egg quality of the hen.

50-70 Weeks of Age	Control	EQE	SEM	Treatment	P-value Treatment x Week	Difference
Hen production						
Egg production, % / week	85.0	84.0	0.939	0.45	0.25	-1%
Feed intake, g/d	139	135	1.720	0.155	< 0.001	-3%
Egg mass, g	57.8	56.8	0.618	0.25	0.158	-2%
Feed conversion ratio, g:g	2.44	2.42	0.045	0.75	< 0.001	-1%
Cumulative mortality, %	8.60	6.56	1.711	0.42	-	-24%
Egg quality traits						
Egg weight, g/egg/d	68.1	67.7	0.135	0.24	0.20	-1%
Laid eggs, n	5.95	5.88	0.066	0.45	0.21	-1%
Cumulative laid eggs, n	184	182	-	-	-	-1%
Sellable eggs, %	94.6	95.4	0.520	0.119	0.84	1%
Discarded eggs, % / week	6.05	5.19	0.507	0.128	0.80	-14%
Cumulative sellable eggs, n	175	174	-	-	-	0%
Eggshell resistance, N	46.5	46.4	0.640	0.94	-	0%
Eggs' Grading, % / week						
XL	17.3	15.7	1.008	0.31	0.40	-9%
L	65.0	65.6	1.090	0.68	0.182	1%
M	12.3	14.0	1.607	0.49	0.044	13%

SEM refers to the standard error of the mean.

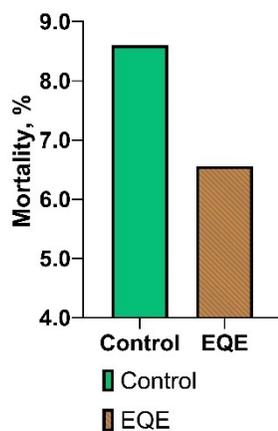


Figure 1. Impact of AO-Biotics® EQE at 50 g/ton of feed of laying hens from 50 to 73 weeks of age on the cumulative mortality.

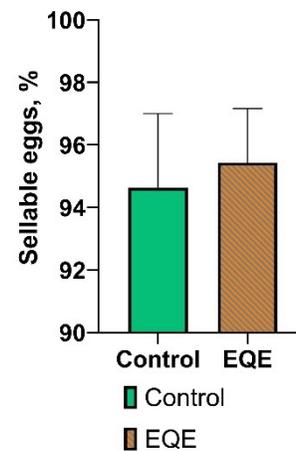


Figure 2. Impact of AO-Biotics® EQE at 50 g/ton of feed of laying hens from 50 to 73 weeks of age on the percentage of sellable eggs.

RESULTS

Table 3. Impact of AO-Biotics® EQE at 50 g/ton of feed of laying hens from 50 to 73 weeks of age on the ROI.

Economic Evaluation ROI		
Values Used		
Number of laying hens in the operation, n of laying hens	20,000	
Pullet price, \$	10.00 €	
Weeks of age of pullets when entering into production, week of age	50	
Total weeks of age at the end of the laying cycle, weeks of age	73	
Mortality of the flock, %	8.60%	
Feed price, \$/MT	450.00 €	
Inclusion price of EQE (price to end user), \$/50 g of EQE	1.50 €	
ADFI, kg/d	0.139	
Rate of production, average %	83.8%	
Number of eggs laid per hen on production cycle, n of eggs	127	
%XL	18%	
%L	64%	
%M	12%	
%S	0.06%	
Average egg weight, g	68.3	
Egg price, \$/egg		
XL	0.218 €	
L	0.126 €	
M	0.114 €	
S	0.100 €	
Economics		
Income from total sold eggs on the production cycle, \$	Control	AO-biotics® EQE
Investment costs, \$	311,276.73 €	310,799.47 €
Pullet price, \$	200,000.00 €	200,000.00 €
Feed, \$	201,483.45 €	196,659.58 €
Cost due to mortality (pullet price), \$	17,200.00 €	13,120.00 €
Total investment cost, \$	418,683.45 €	409,779.58 €
EQE Economical Evaluation		
Recommended dose of EQE, g/MT of feed	50	
Inclusion price of EQE (price to end user), \$/50 g of EQE	1.50 €	
EQE Cost in production		
EQE per production cycle, kg need	22	
Inclusion cost of EQE per production cycle, \$	653.35 €	
EQE Marginal income total sold eggs on the production cycle, \$	- 477.27 €	
EQE Marginal cost, \$	- 8,903.87 €	
EQE Return, number of sold eggs, \$	8,426.60 €	
EQE Investment, \$	653.35 €	
EQE ROI (number of sold eggs)	13	

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