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Report about Doses-Effect-Trial of EUCARVET with Broilers

Ordered by

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1. Introduction

Eucarvet is the trademark of a feed supplement of the Company TRENKA, Goldeggasse 5, A-1040 Vienna, for pigs, cattle, horses, dogs, cats, and poultries. The components of Eucarvet are 36 % Carbo vegetabilis, 21 % Folium Sennae, 10 % Sulphur depuratum, 5 % Extractum Rhei, 0.1 % Aetheroleum Menthae pip. and 0.1 % Aetheroleum Foeniculi. It works laxative, against diarrhoeic, adsorptive, antiseptic and increases the production of digestion secrets. A former trial with broilers Eucarvet showed good results with relative low dose.

In the present broiler trial, diets with low levels of Eucarvet (0, 0.15, 0.30, and 0.45 g/kg diet) were used and the impact on growth and slaughter performance investigated.

2. Experimental data's

Place: Poultry trail station, Äussere Wimitz 3, A-9311 Kraig.

Time: September 4 until October 9, 2006

Animals: 410 one day old ROSS-308 broiler hybrid chicks

Trial design: Table 1 shows the experimental design. All chicks were divided randomly into 24 pens (6 pens per feeding group).

Table 1: Experimental Design

Trait	Feeding group			
	1	2	3	4
Animals, n	103	102	102	103
Pens, n	6	6	6	6
Eucarvet, g/kg diet	0	0.15	0.30	0.45

Diets: Table 2 shows the nutrient recommendations of starter, grower, and finisher feed and table 3 the composition of the diets. The nutrient requirements were adjusted to conventional diets. Anti-coccidium was used in starter and grower feed.

The animals of feeding group 1 got no Eucarvet. Starter, grower and finisher feed of feeding group 2, 3 and 4 was supplemented with Eucarvet. All diets were mixed at the trial station. Starter feed were mixed in an amount of 0.5 kg, grower feed of 1.5 kg, and finisher feed of 1.8 kg/animal. Diets of feeding group 2, 3, and 4 were supplemented with 0.15, 0.30 and 0.45 g Eucarvet/kg, respectively.

Animal keeping: Animals were kept in 24 pens (a' 3m²). 17 to 18 chicks were kept in one pen. Every pen was equipped with an infra-red heater, an automatic drinker, and a feed trough. The ventilating system worked in dependence of the weight of the animals and the temperature indoor. Wood shavings were used as litter down.

Table 2: Calculated nutrient contents of the diets

Nutrient	Starter feed	Grower feed	Finisher feed
ME/kg, MJ	12.8	13.0	13.2
Protein, %	21	20	19
L-Lysine, %	1.28	1.22	1.05
DL-Methionine, %	0.56	0.52	0.44
L-Threonine, %	0.84	0.80	0.72
L-Tryptophan, %	0.25	0.24	0.21
Ca, %	0.95	0.90	0.80
P, %	0.70	0.70	0.60
Na, %	0.12	0.12	0.12
Mn, mg/kg	80	80	80
Vitamine A, IU/kg	12000	10000	8000
Choline-Cl, mg/kg	600	400	200
Monensin-Na, mg/kg	100	100	-

Table 3: Components of the diets

Components	Starter feed	Grower feed	Finisher feed
Maize, %	39.277	41.496	44.132
Wheat, %	20	20	20
Soya bean meal-hp, %	27.053	24.656	22.676

Corn gluten meal, %	3	3	3
Grass meal, %	3	3	3
Soya bean oil, %	3.665	3.998	4.183
Calcium carbonate, %	1.062	0.922	0.990
Dicalcium-P, %	1.709	1.757	1.229
Salt, %	0.261	0.263	0.263
Vitamine premix, %	0.024	0.020	0.016
Trace element premix, %	0.044	0.044	0.044
L-Lysine-HCl, %	0.395	0.401	0.248
DL-Methionine, %	0.241	0.213	0.141
L-Threonine, %	0.091	0.089	0.038
L-Tryptophan, %	0.008	0.011	0
Choline-Cl, %	0.120	0.080	0.040
Elancoban, %	0.050	0.050	-

Feeding: Diets were offered ad libitum. Starter feed was fed from day 1 until day 14, grower feed from day 15 until day 28 and finisher feed from day 29 until day 35.

Daily feed intake: Daily feed intake was recorded for starter, grower and finisher feed.

Feed efficiency: Feed consumption per kg LW gain. Feed efficiency was recorded for the starter, grower, and finisher feed. The LW gain of perished animals were also included in the LW gain for feed efficiency rate.

Animal losses and taking out for microbial investigations: Of every animal the pen, date and weight was recorded.

Live weight (LW): Live weight of the chicks was recorded on day 1, 14, 28, and 35.

Live weight with empty stomach (LWes): Live weight of the animals after 8 h withdrawal of feed.

Eviscerated carcass: Weight of the slaughtered animals without blood, feathers, oil sac, viscera, abdominal fat, and giblets.

Chilled carcass: Weight of eviscerated carcasses after 24 h storage in a cooling chamber at +2 C.

Frying chicken: Weight of chilled carcasses without head & neck, and legs at the hock joint.

Giblets: Weight of empty gizzard, liver without gall-bladder, and heart.

Carcass parts: 12 representative carcasses per feeding group were cut into head & neck, legs at the hock joint, breast meat, legs, wings, and remainder of carcass.

Faeces analysis: All chicks of 24 pens were put on growing day between 29 and 31 in a digestion cage for 2 hours for collection of excrements. The mixed excrements per pen were analysed for dry matter.

3. Statistical Analyses

Data of growth and slaughter performance were analysed by the use of the ANOVA computer program SigmaStat® 3.1.

Model for growth performance traits

$$Y_{ijk} = \mu + FG_i + R_j + e_{ijk}$$

Y_{ijk} = Tested parameter

μ = Overall means

FG_i = Feeding group $i = 1, 4$

R_j = Replicates; $j = 1, 3$

e_{ijk} = Residue

Model for slaughter traits

$$Y_{ijk} = \mu + FG_i + G_{ij} + e_{ijk}$$

Y_{ijk} = Tested parameter

μ = Overall means

FG_i = Feeding group, $i = 1, 4$

G_{ij} = Gender within FG_i , $i = 1, 4$, $j = 1, 2$

e_{ijk} = Residue

4. Results

Table 4 shows the analysed contents of nutrients in starter, grower, and finisher diets. They correspondence good with the calculated values.

Table 4: Results of feed analyses

Nutrient	Feeding group			
	1	2	3	4
	Starter feed			
Dry matter, %	88.3	88.7	89.0	88.1
Protein, %	21.7	21.3	21.5	21.0
Fat, %	6.2	6.4	6.5	6.4
Starch, %	38.8	38.9	39.3	39.2
Sugar, %	5.3	5.6	5.4	5.3
Ca, %	0.90	0.92	0.95	0.88
P, %	0.61	0.61	0.62	0.59
Na, %	0.11	0.12	0.13	0.11
Fe, mg/kg	230	225	221	224
Cu, mg/kg	20	17	18	19
Zn, mg/kg	70	67	70	66
Mn, mg/kg	89	87	78	85
ME, MJ/kg	12.66	12.72	12.83	12.68
	Grower feed			
Dry matter, %	88.5	88.6	89.0	88.6
Protein, %	20.7	20.9	21.0	21.1

Fat, %	6.7	6.7	6.2	6.2
Starch, %	40.0	40.1	40.9	40.7
Sugar, %	5.2	5.2	5.4	5.1
Ca, %	0.86	0.84	0.86	0.83
P, %	0.62	0.61	0.62	0.61
Na, %	0.12	0.11	0.11	0.13
Fe, mg/kg	276	232	239	225
Cu, mg/kg	19	19	18	18
Zn, mg/kg	68	68	67	67
Mn, mg/kg	93	103	89	83
ME, MJ/kg	12.86	12.91	12.91	12.86
		Finisher feed		
Dry matter, %	88.7	88.7	88.7	88.8
Protein, %	20.4	20.4	20.4	20.0
Fat, %	6.5	6.8	6.9	6.6
Starch, %	41.6	41.5	41.1	41.4
Sugar, %	4.7	4.8	4.9	4.6
Ca, %	0.75	0.77	0.79	0.74
P, %	0.53	0.54	0.54	0.52
Na, %	0.12	0.12	0.12	0.11
Fe, mg/kg	224	228	260	237
Cu, mg/kg	15	14	17	16
Zn, mg/kg	66	69	70	66
Mn, mg/kg	92	97	102	96
ME, MJ/kg	12.95	13.05	13.03	12.87

The numbers of perished animals and the animals for Salmonella and Campylobacter investigations are listed in table 5. The investigation for Salmonella and Campylobacter was made on faeces and animals and did not show any positive results.

Table 5: Losses of animals and animals for investigations, n

Time	Feeding group			
	1	2	3	4
	Losses of animals, n			
Life day 1 to 14	2	2	2	1
Life day 15 to 28	1	0	0	1
Life day 29 to 35	0	0	1	1
	Animals for Salmonella and Campylobacter investigations, n			
Life day 28	3	3	3	3
Life day 35	6	3	2	5

The daily feed intake between the feeding groups showed little differences (table 6). The average daily feed intake of starter feed was 41 g, of grower feed 126 g and of finisher feed 182 g per animal. The average daily feed intake of the whole growth period was for feeding group 1, 2, 3 and 4 102, 102, 103 and 102 g, respectively.

Table 6: Daily feed intake, g/animal/day

Growth period	Feeding group				SEM	P-Value
	1	2	3	4		
Pens, n	6	6	6	6	-	-
Day 1 to 14	40	41	41	41	0.7	0.858
Day 15 to 28	125	126	128	125	2,2	0.841
Day 29 to 35	181	181	185	180	2,7	0.551
Day 1 to 35	102	102	103	102	1,2	0.661

Similar to the daily feed intake, the feed efficiency differed less between the feeding groups (table 7). The best results showed feeding group 4, but there were no significant differences between the feeding groups to observe. For the whole growth period the feed efficiency for feeding group 1, 2, 3 and 4 was 1.78, 1.81, 1.80 und 1.76.

Table 7: Feed efficiency, kg/kg LW gain

Growth period	Feeding group				SEM	P-Value
	1	2	3	4		
Pens, n	6	6	6	6	-	-
Day 1 to 14	1.54	1.56	1.60	1.55	0.03	0.644
Day 15 to 28	1.68	1.73	1.68	1.64	0.03	0.336
Day 29 to 35	2.13	2.13	2.12	2.12	0.03	0.990
Day 1 to 35	1.78	1.81	1.80	1.76	0.02	0.430

Table 8 shows the live weight developments. The average live weight of the chicks at start was 53 g, after 2 and 4 weeks 420 and 1480 g, and at the end of the growth period for feeding group 1, 2, 3 and 4 2083, 2061, 2100 and 2107 g, respectively.

Table 8: Live weight, g

Life day	Feeding group				SEM	P-Value
	1	2	3	4		
Pens, n	6	6	6	6	-	-
Start, g	53	53	53	53	0.2	0.886
Day 14, g	424	426	414	430	8	0.575
Day 28, g	1486	1466	1494	1512	21	0.501
Day 35, g	2083	2061	2100	2107	29	0.679

Table 9 presents the slaughter performance. All values are on a high level and small differences between the feeding groups were observed. The dressing percentages of eviscerated carcasses on live weight empty stomach was between 78.6 and 78.8, and of chilled carcass between 70.1 und 70.5.

Table 9: Slaughter performance

Trait	Feeding group				SEM	P-Value
	1	2	3	4		
Tiere, n	97	97	96	97	-	-
LW empty stomach (LWes), g	2087	2074	2073	2095	23	0.882
Eviscerated carcass, g	1660	1640	1641	1657	18	0.804
Evis. carcass in % of LWes	78.8	78.7	78.6	78.8	1.4	0.601
Abdominal fat, g	35	33	36	34	1.0	0.130

Heart, g	9.5	9.4	9.2	9.3	0.1	0.345
Liver, g	39	40	40	40	0.7	0.673
Gizzard, g	30	30	31	30	0.4	0.329
Chilled traits						
Animals, n	90	90	92	91	-	-
Chilled carcass, g	1652	1632	1633	1655	18	0.703
Chilled carcass in % of LWes	78.0	77.8	77.8	78.0	1.4	0.457
Frying carcass, g	1492	1475	1471	1493	17	0.701
Frying carcass in % of LWes	70.5	70.3	70.1	70.4	1.6	0.372

In table 10, the carcass parts of 12 frying chicks per feeding group are listed. The proportion of breast meat in feeding group 3 and 4 was the highest of all 4 feeding groups, but there were no significant differences between the feeding groups

Table 10: Carcass parts

Traits	Feeding group				SEM	P-Value
	1	2	3	4		
Broilers, n	12	12	12	12	-	-
Chilled carcass (CC), g	1647	1612	1627	1641	11	0.124
Head & neck, g	87	82	93	87	2.8	0.065
Legs at the hock joints, g	68	67	71	69	1.4	0.194
Breast meat, g	388	377	385	393	7	0.464
Legs, g	427	434	428	428	0.6	0.811
Wings, g	174	171	167	166	0.4	0.566
Remainder of carcass, g	496	474	476	489	0.6	0.038
Frying carcass (FC), g	1492	1462	1462	1485	10	0.095
Breast meat in % of FC	26.0	25.8	26.4	26.5	0.4	0.704
Legs in % of FC	28.6	29.6	29.3	28.8	0.3	0.149
Wings in % of FC	11.6	11.7	11.4	11.2	0.3	0.622
Remainder of carcass in % of FC	33.3	32.4	32.5	32.9	0.4	0.351

In table 11 the results of the dry matter analysis of faeces are presented. The dry matter content in FG 1 was 19.83 % and in feeding groups 2, 3 and 4 with Eucarvet 20.16, 20.23 and 20.43 %, respectively. Eucarvet had a positive impact on the dry matter content of the excrements of broilers.

Table 11: Faeces analysis

Traits	Feeding group				SEM	P-Value
	1	2	3	4		
Pens, n	6	6	6	6	-	-
Dry matter, %	19,83	20,16	20,23	20,43	0,35	0,682

5. Summary

In present doses-effect-trial with broilers the impact of different levels of Eucarvet (feeding group 1 without Eucarvet, feeding group 2 with 0.15 g, feeding group 3 with 0.30 g and feeding group 4 with 0.45 g Eucarvet/kg compound feed) on growth and slaughter performance and dry matter con-

tent of excrements was investigated. Growth period lasted 35 days. The average live weight of the animals of feeding group 1, 2, 3 and 4 at the end of the growth period was 2083, 2061, 2100 and 2107 g and the feed efficiency 1.78, 1.81, 1.80 and 1.76, respectively. The carcass traits between feeding groups showed no significant differences. The average proportion of breast meat on frying chicks of feeding group 1, 2, 3 and 4 was 26.0, 25.8, 26.4 and 26.5 %. The dry matter content of the excrements of the supplemented feeding groups 2, 3 and 4 was about 0.25 to 0.6 % higher than in the unsupplemented feeding group 1. With regard on the results of the growth and slaughter performances, and the positive impact of the dry matter content of the excrements, 0.30 to 0.40 g Eucarvet/kg feed seems to be the optimal dose for supplementations.