



MEZINÁRODNÍ TESTOVÁNÍ DRŮBEŽE ÚSTRAŠICE

státní podnik

390 02 Tábor 2

Česká republika

BROILER FEEDING TEST

**The effect of Reasil Humic Health and Reasil HumiClean
on performance parameters in broiler chickens**

ITL Innovation Technology for Life, s.r.o.

1 January – 4 February 2020

**Study Investigator:
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s.p. ÚSTRAŠICE

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IČ: 43833580

Material and methods

Test term

Beginning of the test:	10 December 2019 (setting in the incubator) 1 January 2020 (transfer to the chicken house)
End of the test:	4 February 2020

Experimental treatments:

Treatment No.

- 1: **CONTROL** – control diet
- 2: **TRIAL** – control diet + Reasil Humic Health (2 kg/tonn of feed) and Reasil HumiClean (100g/m² of litter of box)

Material:

In total there were 632 day old chicks of ROSS 308. 10-day old chicks were randomly distributed into 4 boxes. Control treatment had 1 box and Trial treatment had 3 boxes. In every box were 158 chicks.

Origin of hatching eggs: Xaverov a.s., RCH Bynina, age of the breeding flock was 56 weeks.

Housing system:

Chickens were kept in the windowless chicken house with full climatic control, on deep litter. Drinking water was supplied ad libitum by nipple drinkers. Each pen was equipped with manually filled tube feeders. Bedding material was wood shaving.

Lighting programme: Day 1 - 7	23 hours of light + 1 hour of darkness
Day 8 - 32	18 hours of light + 6 hours of darkness
Day 33 – 35	23 hours of light + 1 hour of darkness

Stocking density: 18,5 broilers per square meter

Veterinary precautions:

The chicken house was disinfected by Virkon before the chick placement. On days 1 chickens were vaccinated with IB PRIMER.

Feed: Feed was produced in Mezinárodní testování drůbeže, s.p.

Day 11 – 28 Grower (BR2)

Day 29 – 35 Finisher (BR3)

Diet formulas BR2:

Components (%)	BR2	BR3
Wheat	37.78	41.72
Soybean meal	32.00	28.00
Maize	20.42	20.00
Soybean oil	5.68	6.40
Limestone	1.35	1.05
MCP	1.10	1.20
Salt	0.30	0.29
Na ₂ CO ₃	0.15	0.15
L-lysine	0.42	0.39
DL-methionine	0.10	0.10
L-threonine	0.20	0.20
Premix AMV BR 2 PLUS	0.50	-
Premix AMV BR 3 PLUS	-	0.50
Nutrient content		
Crude protein (g/kg)	222.44	208.89
ME (MJ/kg)	12.96	13.26
Lysine (g/kg)	13.07	11.94
Methionine (g/kg)	5.66	5.21
Met.+Cys. (g/kg)	8.80	8.25
Ca (g/kg)	8.86	7.68
P (g/kg)	6.07	6.15
Na (g/kg)	1.62	1.59

Parameters recorded and methods applied

Live weight

Live weight was measured on days 1 and 10 (all the birds in each pen were weighed altogether), 28 (all the birds were weighed individually, without fasting). On day 35 birds were weighed individually, after 12 hours of fasting.

Weight gain

Weight gain per phase and average daily weight gains were calculated for the periods 1 – 10 days, 11 – 28 days, 29 – 35 days and for the overall experiment (1 – 35 days).

Feed conversion ratio

Feed consumption and feed conversion ratio to gain ratio were calculated for the periods 1 – 10 days, 11 – 28 days, 29 – 35 days and for the overall experiment (1 – 35 days). The calculation was included weight of deaths.

Feed consumption

Feed consumption was measured per pen for the feed – starter, grower and finisher.

Mortality

All pens were checked twice a day to see if there were any dead or ill birds. Dead chickens were registered by date and reason of mortality on the day of death. Mortality was recorded for the periods 1 – 10 days, 11 – 28 days, 29 – 35 days and 1 – 35 days.

Statistical analyses

Performance results of live weight (on days 28 and 35) were statistically evaluated using the ANOVA single-factor model (Scheffe test).

Results:

Tab. No.

1 Hatchability

2 Performance results:

2a Body weight

2b Weight gain

2c Feed conversion ratio per 1 kg of live weight

2d Feed consumption per 1 kg of weight gain

2e Feed consumption

3 Mortality

4 Statistical analysis of body weight at the age of 35 days

(average body weight, standard deviation, coefficient of variation)

5 Statistical analyses of performance results

6 Performance results per pen:

6a Body weight

6b Weight gain

6c Feed conversion ratio per 1 kg of live weight

6d Feed consumption per 1 kg of weight gain

6e Feed consumption

Results of incubation and hatching

Tab. No. 1

Treatment	Tr. No.	Fertility		Hatchability		Birds housed	Average weight	
		%	81.90	Set eggs %	Fertile eggs %		Hatching eggs g	Day old chicks g
CONTROL	1			75.24	91.86	158	67.33	44.62
TRIAL	2					474		44.71

Body weight per phases

Tab. No. 2a

Treatment	Tr. No.	Day 1		Day 10		Day 28		Day 35	
		Birds	Average body weight g	Birds	Average body weight g	Birds	Average body weight g	Birds	Average body weight g
CONTROL	1	158	44.62	158	313.04	153	1614.19	152	2288.78
TRIAL	2	474	44.71	474	311.71	474	1653.58	469	2305.49

Weight gain per phases

Tab. No. 2b

Treatment	Tr. No.	Day 1 - 10		Day 11 - 28		Day 29 - 35		Day 1 - 35	
		Weight gain per phase g	Daily weight gain	Weight gain per phase g	Daily weight gain	Weight gain per phase g	Daily weight gain	Weight gain per phase g	Daily weight gain
CONTROL	1	268.42	26.84	1301.15	72.29	674.59	96.37	2244.16	64.12
TRIAL	2	266.99	26.70	1341.87	74.55	651.91	93.13	2260.78	64.59

Feed conversion ratio (Feed consumption per 1 kg of live weight) **Tab. No. 2c**

Treatment	Tr. No.	Feed conversion ratio		
		Day 10 g/kg LW	Day 28 g/kg LW	Day 35 g/kg LW
CONTROL	1	996.68	1234.77	1527.54
TRIAL	2	1013.73	1232.41	1528.03

Feed consumption per 1 kg of weight gain (WG)

Tab. No. 2d

Treatment	Tr. No.	Feed consumption per 1 kg of weight gain		
		1-10 days g/kg WG	11-28 days g/kg WG	29-35 days g/kg WG
CONTROL	1	1162.38	1293.26	2244.11
TRIAL	2	1183.50	1283.14	2295.19

Feed consumption per phases

Tab. No. 2e

Treatment	Tr. No.	Feed consumption			Total
		Starter (1-10 days) kg	Grower (11-28 days) kg	Finisher (29-35 days) kg	
CONTROL	1	49.30	260.36	229.94	539.60
TRIAL	2	149.78	817.23	693.97	1660.98

Statistical analysis - Body weight at 35 days of age

Tab. No. 4

Treatment	Tr. No.	Cocks				Hens			
		Number of birds	Average body weight g/birds	Standard deviation g/birds	Coefficient of variation %	Number of birds	Average body weight g/birds	Standard deviation g/birds	Coefficient of variation %
CONTROL	1	70	2399.71	265.29	11.06	82	2194.09	262.82	11.98
TRIAL	2	245	2446.91	281.44	11.50	224	2150.82	300.48	13.97

Statistical analyses of performance results

Performance results were statistically evaluated using the ANOVA single-factor model (Scheffe test).

The following symbols are used for levels of significance:

- $p \leq 0,001$ *** - differences are very high significant
- $p \leq 0,01$ ** - differences are high significant
- $p \leq 0,05$ * - differences are significant
- $p > 0,05$ 0 - differences are not significant

Tab. No. 5a

Body weight - day 28

Treatment	Treat. No.	No. of box	Average (g)	Standard deviation	Scheffe test	
					CONTROL	TRIAL
CONTROL	1	153	1614.19	182.00		
TRIAL	2	474	1653.58	237.08	0.060090	0.060090

Tab. No. 5b

Body weight - day 35

Treatment	Treat. No.	No. of box	Average (g)	Standard deviation	Scheffe test	
					CONTROL	TRIAL
CONTROL	1	152	2288.78	282.47		
TRIAL	2	469	2305.49	325.94	0.571040	0.571040

Body weight (BW) per box

Tab. No. 6a

Treatment	Tr. No.	Box no.	Day 1		Day 10		Day 28		Day 35	
			Birds	Average body g	Birds	Average body g	Birds	Average body g	Birds	Average body g
CONTROL	1	1	158	44.62	158	313.04	153	1614.19	152	2288.78
		2	158	44.54	158	310.13	158	1590.47	157	2274.38
		3	158	44.73	158	314.43	158	1697.09	157	2309.45
		4	158	44.87	158	310.57	158	1673.19	155	2333.01

Weight gain (WG) and daily weight gain (DWG) per box

Tab. No. 6b

Treatment	Tr. No.	Box no.	Day 1 - 10		Day 11 - 28		Day 29 - 35		Day 1 - 35	
			Weight gain g	Daily g	Weight gain g	Daily g	Weight gain g	Daily g	Weight gain g	Daily g
CONTROL	1	1	268.42	26.84	1301.15	72.29	674.59	96.37	2244.16	64.12
		2	265.58	26.56	1280.34	71.13	683.91	97.70	2229.84	63.71
		3	269.70	26.97	1382.66	76.81	612.36	87.48	2264.71	64.71
		4	265.70	26.57	1362.62	75.70	659.82	94.26	2288.14	65.38

Feed conversion ratio (Feed consumption per 1 kg of live weight) per box Tab. No. 6c

Treatment	Tr. No.	Box no.	Feed conversion ratio		
			Day 10 g/kg LW	Day 28 g/kg LW	Day 35 g/kg LW
CONTROL	1	1	996.68	1234.77	1527.54
		2	1025.31	1250.89	1472.72
		3	1014.49	1219.85	1565.61
		4	1001.39	1227.60	1544.85

Feed consumption per 1 kg of weight gain (WG) Tab. No. 6d

Treatment	Tr. No.	Box no.	Feed consumption per 1 kg of weight gain		
			1-10 days g/kg WG	11-28 days g/kg WG	29-35 days g/kg WG
CONTROL	1	1	1162.38	1293.26	2244.11
		2	1197.27	1305.53	1994.03
		3	1182.76	1266.55	2534.68
		4	1170.48	1278.96	2388.32

Feed consumption per box

Tab. No. 6e

Treatment	Tr. No.	Box No.	Feed consumption				Total
			Starter (1-14 days)	Grower (15-28 days)	Finisher (29-35 days)		
			kg	kg	kg	kg	
CONTROL	1	1	49.30	260.36	229.94	539.60	
			50.24	264.10	213.23	527.57	
			50.40	276.69	242.50	569.59	
			49.14	276.44	238.24	563.82	
TRIAL	2	3					