

Influence of YEA-SACC 1026 Probiotic on Some Production and Consumption Indices in Chicken Broilers

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Abstract

The researches followed the effects of YEA-SACC 1026 probiotic product on some production and consumption indices in chicken broilers. The researches were effected on 75 meat chickens of Ross-308 hybrid, which were grouped in three lots of 25 capita/lot during 42 days. In the Lot 1(E), for 42 days, in the mixed fodder was added YEA-SACC 1026 probiotic in proportion of 0.1% in breeding phase I (1-14 days), of 0.1% in phase II (15-35 days) and 0.1% in phase III (36-42 days). In the Lot 2(E), for 42 days, in the mixed fodder was added YEA-SACC 1026 probiotic in proportion of 0.25% in breeding phase I (1-14 days), of 0.25% in phase II (15-35 days) and 0.25% in phase III (36-42 days). The chickens of both lots were weighted at the beginning of experiment and after that weekly being calculated the average body weight, average daily gain, fodder consumption and fodder conversion index. The use of YEA-SACC 1026 probiotic in lot 1(E) determined an increase of body weight with 16.26%, of average daily gain with 15.55% and the fodder conversion index was reduced with 29.16% given to Control Lot. On the second place was situated the Lot 2(E), in witch was administered 0.25% of YEA-SACC 1026 probiotic, with an increase of body weight of 8.32%, of average daily gain with 7.54% and the fodder conversion index was reduced with 21.78% given to Control Lot. These superior results, registered in meat chickens from Lot 1(E) YEA-SACC 1026 probiotic –0.1% and Lot 2(E) YEA-SACC 1026 probiotic –0.25%, confirm the favourable influence of the two probiotics on chicken broilers' performances.

Keywords: *meat chickens, YEA-SACC 1026, production performances*

INTRODUCTION

Having in view the fact that starting with January 1, 2006 European Union forbidden the use of breeding promoters based on antibiotics in farm animal fodder, it became necessary to find some alternatives, and these ones could be probiotics. Such a probiotic is YEA-SACC 1026, which has an important role in fodder assimilation degree and its efficiency. The living culture of *Saccharomyces cerevisiae*, grown on a medium of yellow maize, malt and treacle, has the next composition: minimum 28% of pure protein,

minimum 6% of pure fat, maximum 14% of pure fiber, maximum 8% of dry substance and contains minimum 5 millions of cells/gram. The product high concentration degree leads to a reduced daily dosage administration. Hereby, in meat chickens and generally in poultry, the administration dosage is of 1 kg of probiotic per 1 tone of fodder.

Concerning the performances of this product, some researchers as Paryad *et al.* (2008) have observed that administration of YEA-SACC 1026 probiotic, in different doses in meat chickens, registered the best results in experimental

lots as regards the chickens' body weight, the fodder conversion index and their healthy status comparatively to control lot.

Gheisari *et al.* (2010), after administration of living yeast in dose of 0.1% in meat chickens, obtained the best results concerning body weight (2780.87 g given to control lot of 2762.179 g), average daily gain (55.93 g given to control lot with 55.57 g) and fodder conversion index (1.82 given to control lot with 1.87) comparatively with control lot and other experimental lots in which administered living yeast in doses of 0.2% and 0.3%.

Another researchers, as Gao *et al.* (2008), administered living *Saccharomyces cerevisiae* in dose of 2.5% for meat chickens and obtained the best results for body weight (2459 g given to control lot with 2378 g), average daily gain (57.5 g given to control lot with 55.6 g) and fodder conversion (1.95 given to 2.03) comparatively with control lot and other experimental ones.

MATERIALS AND METHODS

The researches were effected during September and October 2015 inside the Biobasis of Poultry Discipline from Department II – Technological Sciences of Faculty of Animal Science and Biotechnologies of UASVM Cluj-Napoca, on a number of 75 meat chickens of Ross-308 hybrid, grouped in three lots of 25 capita/lot, during 42 days. For the Control Lot was administered simple mixed fodder having the same protein level as in the lots 1(E) and 2(E). The administered mixed fodder ensured 3030 kcal ME/kg in the first phase, 3134.8 kcal ME/kg in the second phase and 3144 kcal ME/kg in the finishing phase. As concerns the level of crude protein, it was 22.76% in the first phase, 21.31% in the second phase and 19.94% in the third phase, ensuring a good biological value and being in concordance with energetic level of fodder.

In the Lot 1(E), for 42 days, in the mixed fodder was added YEA-SACC 1026 probiotic in proportion of 0.1% in breeding phase I (1-14 days), of 0.1% in phase II (15-35 days) and 0.1% in phase III (36-42 days). In the Lot 2(E), for 42 days, in the mixed fodder was added YEA-SACC 1026 probiotic in proportion of 0.25% in breeding phase I (1-14 days), of 0.25% in phase II (15-35 days) and 0.25% in phase III (36-42 days). The fodder was administered *ad-libitum*. The chickens of both lots

were weighted at the beginning of experiment and subsequent weekly being calculated the average body weight, average daily gain, fodder consumption and fodder conversion index.

During the experimental researches, the biological material do not received any vaccine or medication treatment.

The experimental data were statistically analysed by Student test and GraphPad InStat ver. 3.10 program.

RESULTS AND DISCUSSION

The average values and variability of body weight, in meat chickens on breeding phase I (1-14 days), are presented in *Table 1*. Comparing the data, it can be observed that there are not significant differences of body weight among the three lots in the beginning of experiment, at 7 days, but at 14 days appear significant differences between L1(E) and L(M).

The average daily gain obtained in breeding phase I is presented in *Table 2*. The difference of average daily gain realized during 14 days is greater in experimental lots than the control one. In L1(E), after the breeding phase I, is observed a difference of 9.18% given to L(M).

The average values and variability of body weight in meat chickens on breeding phase II (15-35 days) are presented in *Table 3*. Gao *et al.* (2008) obtained at 21 days age an average body weight of 757.9 g with probiotic supplement of Yeast culture 2.5g/kg of diet. This average body weight, compared to our data (804.2 g in L(M), 848.92 g in L1(E) and 839.56 g in L2(E)), was significantly reduced, maybe because the probiotic supplement was not so benefic in the metabolic process.

At 28 days, there are observed significant differences between lots L1(E) and L2(E). From the data of *Table 3* we can say that there are distinctive significant differences between L1(E) and L(M), but there are not significant differences between L2(E) and L(M). The gain difference between L2(E) and L(M) is only of 19.6 g, and between experimental lots is only of 82.88 g. From the presented data comes out that the effect of used probiotic (YEA/SACC 1026) is most efficient in doses of 0.1% in phase II.

The average daily gain realized in breeding phase II is presented in *Table 4*. As can be observed from data of *Table 4*, in Lot L1(E) was obtained an increase of average daily gain until 28 days of

Tab. 1. Average values and variability of body weight in broiler chickens during 1-14 days (g/capita)

Age (days)	L (M) n=25		L1(E) n=25 YEA-SACC1026 0.1%		L2(E) n=25 YEA-SACC1026 0.25%	
	X±S _v	V%	X±S _v	V%	X±S _v	V%
at 1 day	43.6±0.62	7.16	45.12±0.43	4.72	44.32±0.53	5.93
at 7 days	174.2±2.43	6.99	182.68±2.05	5.60	179.36±1.94	5.40
at 14 days	420.6±6.35	7.55	451.72*±7.07	7.83	431.56±4.52	5.23

p>0.05- insignificant differences;

*, p<0.05- significant differences

Tab. 2. Evolution of average gain in meat chickens during breeding phase I

Age (days)	U.M	L (M) n=25	L1(E) n=25 YEA-SACC1026 0.1%		L2(E) n=25 YEA-SACC1026 0.25%	
Phase I (1-14 days)	at 7 days	g	130.6	137.56	135.04	
		%	100	105.32	103.39	
	at 14 days	g	246.4	269.04	252.2	
		%	100	109.18	102.35	

Tab. 3. Average values and variability of body weight in broiler chickens during 15-35 days (g/capita)

Age (days)	L (M) n=25		L1(E) n=25 YEA-SACC1026 0.1%		L2(E) n=25 YEA-SACC1026 0.25%	
	X±S _v	V%	X±S _v	V%	X±S _v	V%
at 15 days	420.6±6.35	7.55	451.72*±7.07	7.83	431.56±4.52	5.23
at 21 days	804.2±10.52	6.54	848.92±15.18	8.94	839.56±10.53	6.27
at 28 days	1313.6±19.53	7.43	1426.76**±24.82	8.71	1348.84±17.41	6.45
at 35 days	1932.76±43.73	11.31	2035.24*±41.53	10.20	1952.36±30.93	7.92

*, p<0.05- significant differences; **, p<0.01- distinctive significant differences;

***, p<0.001- very significant differences

Tab. 4. Evolution of average gain in meat chickens during breeding phase II

Age (days)	U.M	L (M) n=25	L1(E) n=25 YEA-SACC1026 0.1%		L2(E) n=25 YEA-SACC1026 0.25%	
Phase II (15-35 days)	at 21 days	g	383.6	397.2	408	
		%	100	103.54	106.36	
	at 28 days	g	509.4	577.84	509.28	
		%	100	113.43	99.97	
	at 35 days	g	619.16	608.48	603.52	
		%	100	98.27	97.47	

+13.43%, and after it decreases to -1.73% given to L(M) at 35 days. In the lot L2(E) is observed an increase of average daily gain of +6.36% at 21 days given to L(M), followed by a decrease of -0.03% at 28 days and -2.53% at 35 days.

In the breeding phase III, from 36 days to 42 days, the evolution of average body weight is presented in *Table 5*. In *Table 5* can be observed that differences among experimental lots and control one are different significant. The very significant differences from phase II presented in *Table 5* are due to replacement in this period of "the coccidiostatic" from fodder composition with mentioned probiotics.

Gao *et al.* (2008) obtained at 42 days age an average body weight of 2459.0 g with probiotic supplement of Yeast culture 2.5 g/kg of diet. This

value was inferior to those one obtained by us in lot L1(E), respectively 2510.4 g. Once again, the explanation could be the reduced effect of probiotic supplement when it was added as 2.5 g/kg of diet.

The average daily gain (*Tab. 6*) was greater for experimental lots. From the data presented in *Table 6* comes out that in final breeding phase III (finishing) the average daily gain was of 109.83% in L1(E) greater than in L(M) and of 70.72% in L2(E) given to L(M). The administered fodder was the same in all three lots, as was presented in *Material and Methods* chapter.

The average fodder consumption, on breeding phase I in all 3 experimental lots, is presented in *Table 7*.

Tab. 5. Average values and variability of body weight in broiler chickens during 36-42 days (g/capita)

Age (days)	L (M) n=25		L1(E) n=25 YEA-SACC1026 0.1%		L2(E) n=25 YEA-SACC1026 0.25%	
	X±S _x	V%	X±S _x	V%	X±S _x	V%
at 36 days	1932.76±43.73	11.31	2035.24*±41.53	10.20	1952.36±30.93	7.92
at 42 days	2159.2±33.23	7.69	2510.4***±43.06	8.58	2338.96***±42.45	9.07

*, p<0.05- significant differences; **, p<0.01- distinctive significant differences;

***, p<0.001- very significant differences

Tab. 6. Evolution of average gain in meat chickens during breeding phase III

Age (days)	U.M	L (M) n=25	L1(E) n=25 YEA-SACC1026 0.1%		L2(E) n=25 YEA-SACC1026 0.25%	
Phase II (36-42 days)	at 36 days	g	619.16		608.48	
		%	100		98.27	
	at 42 days	g	226.44		475.16	
		%	100		209,83	

Tab. 7. Evolution of fodder consumption in broiler chickens during breeding phase I (1-14 days)

Age (days)	U.M	L (M) n=25	L1(E) n=25 YEA-SACC1026 0.1%		L2(E) n=25 YEA-SACC1026 0.25%	
Phase I (1-14 days)	at 7 days	g	37.71		37.14	
		g	37.71		39.14	
	Average consumption on phase I	g	37.71		38.14	
		g	37.71		37.77	

The fodder consumption in the first 7 days was smaller in experimental lots and greater in control one, but after 7 days the fodder consumption increased in experimental lots and remained constant in control one.

The evolution of fodder consumption on breeding phase II is presented in *Table 8*. The fodder consumption in this breeding phase II is smaller in experimental lots given to control one starting with 28 days until 35 days, but the average consumption on breeding phase II is almost equal between the two experimental lots.

Gao *et al.* (2008), during 22-42 days with probiotic supplement of Yeast culture 2.5g/kg of diet, obtained an average fodder consumption of 176.1 g/bird per day, which was significantly increased compared to our data, and during entire experimental period an average consumption of 112.2 g/bird per day, which was inferior compared to our data.

In *Table 9* is presented the fodder consumption during finishing period. The fodder conversion index was superior in lot L1(E) given to control one with 29.16%, and in lot L2(E) it was superior with 21.78% given to control one, as is presented

in *Table 10*. The analysis of these fodder conversion indices shows the efficiency of YEA-SACC 1026 probiotic.

Gheisari and Kholeghipour (2010), after administration of powdery living yeast in dose of 0.1% in meat chickens, obtained the best results concerning body weight (2775.77 g given to control lot of 2762.17 g), average daily gain (55.80 g given to control lot with 55.57 g) and fodder conversion index (1.88 given to control lot with 1.87) comparatively with control lot and other experimental lots in which administered living yeast in doses of 0.2% and 0.3%.

Another researchers, as Gao *et al.* (2008), administered living *Saccharomyces cerevisiae* in dose of 2.5% for meat chickens and obtained the best results for average daily gain (57.5 g given to control lot with 55.6 g) and fodder conversion (1.95 given to 2.03) comparatively with control lot and other experimental ones.

The analysis of these fodder conversion indices shows the efficiency of YEA-SACC 1026 probiotic, but the administered doses must be proper depending on species, age and especially on diet.

Tab. 8. Evolution of fodder consumption in broiler chickens during breeding phase II (15-35 days)

Age (days)	U.M	L (M) n=25	L1(E) n=25	L2(E) n=25
			YEA-SACC1026 0.1%	YEA-SACC1026 0.25%
Phase II (15-35 days)	at 21 days	g	64.71	65.31
	at 28 days	g	128.02	125.17
	at 35 days	g	159.69	156.23
	Average consumption on phase II	g	117.23	115.57

Tab. 9. Evolution of fodder consumption in broiler chickens during breeding phase III (36-42 days)

Age (days)	U.M	L (M) n=25	L1(E) n=25	L2(E) n=25
			YEA-SACC1026 0.1%	YEA-SACC1026 0.25%
Phase III (36-42 days)	at 42 days	g	165.71	199.62
Average daily consumption during entire experimental period		g	104.68	113.32

Tab. 10. Evolution of fodder conversion index in broiler chickens during entire experimental period

Age (days)	U.M	L (M) n=25	L1(E) n=25	L2(E) n=25
			YEA-SACC1026 0.1%	YEA-SACC1026 0.25%
Phase I (1-14 days)	Kg/Kg	1.40	1.31	1.36
		100	93.57	97.14
Phase II (15-35 days)	Kg/Kg	1.62	1.52	1.59
		100	93.82	98.14
Phase III (36-42 days)	Kg/Kg	5.12	2.94	3.43
		100	57.42	66.99
Final average on entire period	Kg/Kg	2.71	1.92	2.12
	%	100	70.84	78.22

CONCLUSIONS

From presented data can be observed that the use of YEA-SACC 1026 probiotic as supplement in chickens' nutrition determined a substantial improvement of production and consumption indices. The body weight at 42 days in lot L1(E) was with 16.26% greater given to control lot L(M), and in lot L2(E) was with 8.32% greater given to control lot L(M). The average daily gain on entire experimental period in lot L1(E) was greater with 39.09% given to control lot L(M), and in lot L2(E) was greater with 23.51% given to control lot L(M). Although the fodder consumption in lot L1(E) was greater with 12.36% given to control lot L(M) and in lot L2(E) greater with 8.25% given to control lot L(M), the fodder conversion index was in lot L1(E) greater with 29.16% given to control lot L(M), and in lot L2(E) was greater with 21.78% given to control lot L(M).

The use of YEA-SACC 1026 probiotic in chicken broilers' fodder is recommended in two

doses (0.1% and 0.25%) because it improves the weight gain and fodder conversion.

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