

THE INFLUENCE OF THE PROBIOTIC YEA-SACC-1026 AND ORGANIC SELENIUM (Sel – Plex) ON SLAUGHTER INDICES IN BROILER CHICKENS

Şara, A. *, Antonia Odagiu*, M. Benţea*, Mariana Dinea*, L. Pantă**

*University of Agricultural Sciences and Veterinary Medicine Cluj – Napoca, Manastur St., No. 3 – 5, 400372 Cluj - Napoca' ** Alltech, Romania

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Summary. The research was performed on 100 broiler chickens, the hybrid Ross-308, divided by 3 groups, 33 heads/group during 42 days. In experimental group 2, in combined forage the commercial product – the probiotic YEA-SACC-1020 in proportion of 0.20%, and in 3rd experimental group the organic selenium (Sel-plex) in proportion of 0.02%. In the end of the experimental cycle, control slaughters were performed, 10 chickens by group, their body weight being almost equal with average weight of their group. The use of the commercial products YEA-SACC-1020 and the organic selenium (Sel-plex) in broiler chicken feeding lead to the increase of the slaughter yield by 3.19% and 4.87% respectively, and commercial yield with 3.01% and 4.49%, respectively. In chickens from the experimental groups 2 and 3, the superior quality meat share in carcass (Ist and IInd quality) was higher compared to control group. The results obtained in our study confirm the favorable effects of these additives, organic selenium, respectively, on production and quality of chicken meat.

INTRODUCTION

The probiotic products containing lactic bacteria and live yeasts are often used in broiler chicken feeding. The YEA-SACC-1026 is a probiotic obtained from live yeast (*Saccharomyces cerevisiae*) cultures and used in polygastric and monogastric livestock (broiler chickens inclusively). It has a positive effect on production performances and health status. In the mean time, satisfactory results were obtained when organic selenium (Sel-Plex) was administered in broiler chickens, worldwide.

The results obtained at University of Agricultural Sciences Nitra and Institute of Animal Physiology Kosice from Slovakia (Leng, L. et al., 2003) demonstrated benefits due to supplementation of diets administered to broiler chickens with organic selenium on yeast support (Sel-Plex) due to capacity of yeast to favorize formation of tissue deposits of selenium.

The research performed in Brasil, where inorganic selenium (sodium selenite) was administered in doses of 0.5 ppm selenium, and organic selenium (Sel-Plex) in doses of 0.3 ppm in broiler chickens (Rutz, F. et al., 2003) demonstrated the superior efficiency of organic selenium. Broiler chickens which received feed supplemented with organic selenium (Sel-Plex) recorded a higher body weight and an enhanced capacity of rendig valuable of food, without influencing forage consumption and mortality.

Arruda, J.S. et al. (2004) replacing inorganic selenium with organic selenium in feed administered to broiler chickens obtained in experimental group superior parameters concerning body weight, feed conversion, and European Fator of Efficiency. These results show that supplements of 0.1 ppm selenium as Sel-Plex in combination to 0.2 ppm selenium as sodium selenite lead to improvment of growing performances in broiler chickens. Anciuti, M.A. et al. (2004) found in broiler chickens which received 0.2 ppp selenium as Sel-Plex supplements in diets an increased carcass weight and decreased mortality.

It was also found that organic selenium improved eviscerated weight and production of meat-breast.

Considering the advantages of these additives, we consider necessary to perform trials with the aim of recording the influence of the probiotic YEA-SACC-1026 and organic selenium on some slaughter indices in broiler chickens.

MATERIAL AND METHOD

The research was performed on 100 broiler chickens – the hybrid Ross-308 – divided in 3 groups, 33 heads/group during 42 days. The feeding was performed with combined forages with the same proteic and energetic level. In experimental group 2, in combined forage the commercial product – the probiotic YEA-SACC-1020 in proportion of 0.20%, and in 3rd experimental group the organic selenium (Sel-plex) in proportion of 0.02%. The experimental period lasted 42 days, and was divided by 3 phases.

In the end of the experimental cycle, control slaughters were performed, 10 chickens by group, their body weight being almost equal with average weight of their group. The slaughter yield, commercial yield, and meat quality were determined by cutting. In order to determine the meat quality, by cutting, the carcass weight, and weight of the component parts: head, neck, whistle, chest, leg, back and wings, were determined. The data were statistically analyzed using the Student test.

RESULTS AND DISCUSSIONS

The average values and variability of the slaughter yield of the broiler chickens are presented in table 1.

Table 1

The average values and the variability of the slaughter yield in broiler chickens

Group	Yield (%)	
	Absolute	Relative

	n	$\bar{X} \pm s_x$	V%	%
Group 1 (Control)	10	73.64 ± 1.06	2.90	100.00
Group 2 (YEA-SACC-1026)	10	75.99 ± 0.71	1.87	103.19
Group 3 (Sel-Plex)	10	77.23 ± 0.75	1.95	104.87

Analyzing the results we find in chickens from the group 3 (E) the highest slaughter yield ($77.23 \pm 0.75\%$), with 4.87% higher compared to control group ($73.64 \pm 1.06\%$). The slaughter yield of the chickens from the group 2 (E) was higher compared to the yield of chickens from the slaughter group, by 3.19%.

Concerning the values of the commercial yield (table 2), the same evolution like carcass yield was recorded. The highest value was recorded in chickens from the group 3 (E) with an average of $81.85 \pm 0.78\%$, followed by the chickens from the group 2 (E) with an average of $80.69 \pm 0.81\%$, and the lowest value of the commercial yield was recorded in control group, with an average of $78.33 \pm 1.07\%$. The highest economical efficiency was recorded in chickens from both experimental groups, especially chickens from the group 3 (E). Expressed in relative values, the value of the commercial yield is with 4.49% higher in group 3 (E) compared to control group and 3.01% higher in group 2 compared with control group.

Table 2

The average values and the variability of the commercial yield in broiler chickens

Group	Yield (%)			
	Absolute			Relative
	n	$\bar{X} \pm s_x$	V%	%
Group 1 (Control)	10	78.33 ± 1.07	2.75	100.00
Group 2 (YEA-SACC-1026)	10	80.69 ± 0.81	2.02	103.01
Group 3 (Sel-Plex)	10	81.85 ± 0.78	1.92	104.49

The data presented in table 3 shows the highest share of the high quality meat (Ist and IInd quality) in carcass in experimental groups 2 and 3, compared to control groups. As consequence of administration of the additive supplements in feeding, the high quality meat quantity increased in detriment of IIIrd quality meat.

Table 3

The results of cutting broiler chickens carcasses

Group	Meat quality (% of carcass)					
	I (breast + legs)		II (back, wings)		III (head, neck, whistle)	
	Absolute	Relative	Absolute	Relative	Absolute	Relative
Group 1 (Control)	54.44	100.00	29.30	100.00	18.25	100.00
Group 2 (YEA-SACC-1026)	52.73	100.55	30.78	105.05	16.47	90.24
Group 3 (Sel-Plex)	53.69	102.38	30.45	103.92	15.86	86.90

In chickens from the group 3 the share of the breast + leg (Ist quality) was of 53.69% of carcass weight, compared to 52.44% in control group. A satisfactory share of

Ist quality meat was recorded in group 2, experimental, meaning 52.73% of carcass weight.

Analyzing the IInd quality meat proportion, the highest value was obtained in group II, 30.78% of carcass weight, compared to 30.45% in group 3 experimental, and 29.30% in control group.

The IIIrd quality meat was recorded in higher proportion in chickens from the control group, with a share of 18.25% of carcass weight, compared to 16.47% in chickens from group 2, and only 15.86% in chickens from the group 3.

CONCLUSIONS

1. The use of the probiotic YEA-SACC-1026 and organic selenium (Sel-plex) in the feed of broiler chicken determined the improvement of the main slaughter indices.
2. This confirms the favorable effects of these additives on both meat production and quality.
3. The cutting of the carcasses shows the higher proportion of the Ist quality meat (chest + legs) in chickens from the group 2 (E) compared to the individuals from the individuals from the control group.
4. Based on these results, we recommend the use of these forage additives, organic selenium, especially, in broiler chicken because improve the slaughter yield, Ist and IInd quality meat proportion in carcass.

BIBLIOGRAPHY

1. Anciuti, M.A., Rutz, F., da Silva L.A., Cosenza, R.C., and da Silva R.G., 2004, Effect of dietary inorganic by organic selenium (Sel-plex) on performance of broilers, Proceedings of the 20th Annual Alltech Symposium Re-immaging the Feed Industry, Kentucky, USA, suppl. 11, 14
2. Arruda, J.S., Rutz, F., and Pan, E.A., 2004, Influence of replacing dietary inorganic with organic selenium (Sel-plex) on performance of broilers, Proceedings of the 20th Annual Alltech Symposium Re-immaging the Feed Industry, Kentucky, USA, suppl. 11, 13
3. Edens, F.W., Parkhurst, C.R., Havenstein, G.B., Ferket, P.R., and Sefton, A.E., 2004, Influence of selenium yeast (Sel-plex) on performance and carcass yield of broiler males grown in a cage environment, Proceedings of the 20th Annual Alltech Symposium Re-immaging the Feed Industry, Kentucky, USA, suppl. 11, 31
4. Hess, J.B., K.M. Downs, S.F. Bilgili, 2006, Nutritional Biotechnology in the Feed and food Industry, Lyons, T.P., K.A. Jaques, J.M. Hower Eds., 107 - 112
5. Leng, L., Bobcek, R. Kuricova, S., Boldizarova, K., Gresakova, L., Sevcikova Z., Revajova V., Levkutova, M. and Levkut, M., 2003, Comparative metabolic and immune responses of chickens fed diets containing inorganic selenium and Sel-

- plex M organic selenium, Nutritional Biotechnology in the Feed and Food Industries, Lyons, T.P. and Jaques K.A. Eds, 131-145
6. Rutz, F., Pan, E.A., Xavier, G.B., and Anciuti, M.A., 2003, Meeting selenium demands of modern poultry: responses to Sel-plex TM organic selenium in broiler and breeder diets, Nutritional Biotechnology in the Feed and Food Industries, Lyons, T.P. and Jaques K.A. Eds, 147 – 161
 7. Surai, P.F., 2006, Organic Selenium: benefits to animals and humans, a biochemists' view, Nutritional Biotechnology in the Feed and food Industry, Lyons, T.P., K.A. Jaques, J.M. Hower Eds., 205 - 260