

EFFECT OF PROBIOTIC PREPARATES WITH DIFFERENT STRAIN ON MEAT PRODUCTION OF BROILER DUCKS

EFEKTUL PREPARATELOR CU DIFERITE SUŞE DE PROBIOTICE ASUPRA PRODUCTIEI DE CARNE A BROILERILOR DE RATA

WEIS J.*, HRNČÁR C.*, MINDEK S.**

*Department of Poultry Science and Small Animal Husbandry

** Department of Veterinary Sciences

Faculty of Agrobiology and Food Resources, Slovak University of Agriculture, Nitra,
Slovakia

This study was conducted to investigate the effect of supplementation of the probiotic prepares with different probiotic strain on the meat production of broiler duck females. The experiment realised in half-operation conditions experimental base of Department of Poultry Science and Small Animal Husbandry of Slovak University of Agriculture in Nitra in three-floor cage technology. Totally 45 one day broiler duck females hybrid PKR divided into three groups: control group - without addition of probiotic preparate, experimental group 1 - addition of probiotic preparate Propoul with strain *Lactobacillus fermentum* in powder form at drinking water in dose 0.40 g daily during all experiment, experimental group 2 - addition of probiotic preparate Protexin Concentrate with strain *Enterococcus faecium* in powder form at drinking water in dose 0.24 g daily during all experiment. The results from this study showed that supplementation of probiotic prepares Propoul and Protexin Concentrate in drinking water caused improvement of meat production of broiler ducks. Probiotic preparate Propoul manifested as a preparate with higher effect on meat production in comparison with probiotic Protexin Concentrate.

Key words: broiler duck, probiotic, *Lactobacillus fermentum*, *Enterococcus faecium*, meat production

Introduction

Poultry is now a day raised under intensive production systems in densely populated flocks to achieve high levels of economic efficiency. During this process poultry may get stress from a number of factors such as overcrowding, unfavourable ambient medium, feed intake, vaccination etc. The dietary use of probiotic feeding is gaining momentum in poultry to counteract and minimize the stresses (Shoeib and Madian, 2002).

As feed additive, probiotics has a good impact on the poultry performance (Stavric and Kornegay, 1995). These live organisms after residing intestinal tract

and their metabolites can act as immunomodulatory agent by activating specific and non-specific host immune responses in poultry, which in turn help in prevention and control of various infectious diseases (Koenen et al., 2004).

In the case of the duck meat, this kind of meat introduced among delicacies. Dietary requirements on duck meat are not of the first priority and higher energy value of this meat is tolerated. The fat tissue of meat plays an important role in the thermoregulation of duck. The fat is located especially in the skin and in subcutaneous parts and results in higher energetic value of meat of duck and it is stored also in muscles and in the space between muscles. The content of fat in different individuals varies and in breast and leg muscles ranges from 1.3 to 3.0 % but fat content in the eatable portion is 20 % or more (Uhrín et al., 1993).

This study was conducted to investigate the effect of supplementation of the probiotic prepares with different probiotic strain on the meat production of broiler duck females.

Materials and Methods

The experiment realised in half-operation conditions experimental base of Department of Poultry Science and Small Animal Husbandry of Slovak University of Agriculture in Nitra in three-floor cage technology.

Totally 45 one day broiler duck males hybrid PKR divided into three groups:

- control group (C) - without addition of probiotic preparate in drinking water;
- experimental group 1 (E1) - addition of probiotic preparate Propoul with strain *Lactobacillus fermentum* in powder form at drinking water in dose 0.40 g daily from 1 day to 56 day;
- experimental group 2 (E2) - addition of probiotic preparate Protexin Concentrate with strain *Enterococcus faecium* in powder form at drinking water in dose 0.24 g daily from 1 day to 56 day.

Broiler ducks were housed in temperature controlled room with natural length of lighting and feed and water were provided ad libitum thorough the experiment. All birds were feed with a standard commercial feed mixtures. In 56 day of age we slaughtered 5 broiler ducks from each group and we realised complete carcass analyse. From carcass parameters we observed:

- body weight before slaughter in gram;
- weight of consumed visceral apparatuses in gram (liver, muscular stomach, heart, neck in height of sails without skin);
- weight of carcass body in gram;
- weight of breast in gram;
- weight of thighs in gram;
- weight of back in gram;
- weight of wings in gram;
- carcass yield in %

Table 1

CHARACTERISTIC OF MEAT PRODUCTION IN BROILER DUCK MALES

Body weight before slaughter in gram					
Group	n	x	s	CV	Duncan's test
Control	5	2360.00	210.21	8.91	C : E1 ++
Experimental 1	5	2517.00	275.08	11.21	C : E2 +
Experimental 2	5	2468.00	255.29	10.34	E1 : E2 -
weight of consumed visceral apparatuses in gram					
Group	n	x	s	CV	Duncan's test
Control	5	222.80	14.39	6.46	C : E1 -
Experimental 1	5	239.20	13.54	5.66	C : E2 -
Experimental 2	5	237.20	16.95	7.14	E1 : E2 -
weight of carcass body in gram					
Group	n	x	s	CV	Duncan's test
Control	5	1498.80	183.38	12.24	C : E1 ++
Experimental 1	5	1614.80	159.37	9.84	C : E2 +
Experimental 2	5	1576.80	210.78	13.35	E1 : E2 -
weight of breast in gram					
Group	n	x	s	CV	Duncan's test
Control	5	407.80	70.05	17.14	C : E1 +
Experimental 1	5	477.00	87.15	18.27	C : E2 -
Experimental 2	5	451.60	99.08	21.94	E1 : E2 -
weight of thighs in gram					
Group	n	x	s	CV	Duncan's test
Control	5	372.00	40.83	10.99	C : E1 -
Experimental 1	5	377.60	38.69	10.25	C : E2 -
Experimental 2	5	376.00	42.24	11.23	E1 : E2 -
weight of back in gram					
Group	n	x	s	CV	Duncan's test
Control	5	491.40	89.03	18.08	C : E1 +
Experimental 1	5	544.60	73.62	13.52	C : E2 -
Experimental 2	5	524.40	69.72	13.30	E1 : E2 -
weight of wings in gram					
Group	n	x	s	CV	Duncan's test
Control	5	222.80	13.01	5.84	C : E1 -
Experimental 1	5	226.80	20.28	8.94	C : E2 -
Experimental 2	5	224.80	18.95	8.43	E1 : E2 -
carcass yield in %					
Group	n	x	s	CV	Duncan's test
Control	5	72.95	2.39	3.28	C : E1 -
Experimental 1	5	73.66	2.01	2.73	C : E2 -
Experimental 2	5	73.50	2.88	3.91	E1 : E2 -

- P > 0.05 + P < 0.05 ++ P < 0.01 +++ P < 0.001

Results and Discussions

As shown in Table 1 body weight before slaughter and weight of the carcass body were statistically high significant ($P < 0.01$) affected by addition of the probiotic preparate Propoul. However, weight of consumed visceral apparatuses, weight of thighs, weight of wings and carcass yield were not affected by using probiotic Propoul supplement ($P > 0.05$). We found statistically significant difference between experimental group 1 and control group in benefit of the probiotic Propoul application ($P < 0.05$).

In comparison with Propoul, effect of probiotic preparate Protexin Concentrate was less marked. We observed statistically significant difference ($P < 0.05$) in benefit of experimental group 2 with Protexin Concentrate for body weight before slaughter and weight of carcass body. In case of weight of consumed visceral apparatuses, weight of breast, weight of thighs, weight of back, weight of wings and carcass yield we recorded not statistically significant difference ($P > 0.05$) in the experimental group with probiotic Protexin Concentrate.

Differences between applications of probiotics were statistically not significant ($P > 0.05$). However, in each from observed measurements we achieved better results in experimental group 1 with addition of probiotic preparate Propoul.

Conclusions

The results from this study shows that supplementation of probiotic prepartes Propoul and Protexin Concentrate in drinking water caused improvement of meat production of broiler ducks. Probiotic preparate Propoul with strain *Lactobacillus fermentum* manifested as a preparate with higher effect on the meat production in comparison with probiotic Protexin Concentrate with strain *Enterococcus faecium*.

Bibliography

1. **Ahmad, I.** (2006) - *Effect of Probiotics on Broilers Performance*, Inter. J. of Poultr. Sci. 593,597
2. **Koenen, M.E., Karmer J., Boersma W.J. et al.** (2004) - *Immunomodulation by probiotic lactobacilli in layer and meat-type chickens*, Br. Poult. Sci. 355,366.
3. **Shoeib, H.K., Madian A.H.** (2002) - *A study on the effect of feeding diets containing probiotics on growth performance, intestinal flora and haematological picture of broiler chicks*, Assiut Vet. Med. J. 112,125.
4. **Stavric, S. , Kornegay, E.T.** (1995) - *Microbial probiotic for pigs and poultry biotechnology in animal feeds and animals feeding*, R.J Wallace and A. Cheesen, Eds. V.C.H., Weinheim 205,231.
5. **Uhrín, V., Horváthová, V., Horniaková, E. et al.** (1993) - *Quality of Poultry Meat*, Slovak University of Agriculture 102,103.