

# Performance of the Broiler Duck Males after Application of Two Different Probiotic Preparations

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## Abstract

This study was conducted to investigate the effect of supplementation of the probiotic preparations with different probiotic strain on the basic fattening parameters of broiler duck males. The experiment was carried out 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 of hybrid PKB divided into three groups: control group - without addition of probiotic preparation, experimental group 1 - addition of probiotic preparation of Propoul with strain *Lactobacillus fermentum* in powder form into drinking water in dose of 0,90 g daily during all experiment, experimental group 2 - addition of probiotic preparation Protexin Concentrate with strain *Enterococcus faecium* in powder form into drinking water in dose of 0,24 g daily during all experiment. The results from this study showed that supplementation of pro-biotic Propoul and Protexin Concentrate in drinking water caused improvement of basic fattening parameters of broiler duck males. Probiotic preparation Propoul manifested as prepared with higher effect on fattening parameters (live weight, average daily weight gain, feed consumption, mortality) in comparison with probiotic Protexin Concentrate.

**Keywords:** Broiler duck, probiotic, *Lactobacillus fermentum*, *Enterococcus faecium*, fattening parameters.

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## 1. Introduction

Reid et al. (2003) defined probiotics as live microorganisms that, when administered in adequate amounts, confer a health benefit on the host.

Bacterial species that have traditionally been regarded as safe are used in probiotics. The main strains used include lactic acid bacteria and bifidobacteria that inhibit the intestinal tracts of human and animals (Ishibashi and Yamazaki, 2001).

Capcarová et al. (2009) recorded that preventive application of probiotic preparations achieved better utilization of nutrients and feed and they had a positive effect on environment.

The objective of this contribution was to find out in half-operating conditions of cage technologies the influence of various probiotic preparations (Propul, Protexin Concentrate) containing a different probiotic strain (*Lactobacillus fermentum*, *Enterococcus faecium*) on fattening parameters broiler ducks.

## 2. 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 PKB divided into three groups:

- control group (K -15 duck males) - without addition of probiotic preparate in drinking water;

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- experimental group 1 (P1 - 15 duck males) - addition of probiotic preparate Propoul with strain *Lactobacillus fermentum* in powder form at drinking water in dose 0.90 g daily from 1 day to 56 day;

- experimental group 2 (P2 - 15 duck males) - 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.

From fattening parameters we concentrated on following base parameters of broiler ducks:

- the average live weight in grams detected by weighting on 7 - day intervals (1., 7., 14., 21., 28., 35., 42., 49., 56. day)
- the average daily weight gain in grams
- the feed consumption on 1 kg live weight in kg
- mortality.

The scores utility of broiler ducks we subjugated the single-factor analysis and supplemented Duncan's test.

### 3. Results and discussion

As it results from Picture 1 and table 1, we recorded relatively well-balanced values in live weight duck males to the 28. day of fattening. The situation started to change on the 35. day of fattening. Since that day we recorded statistic considerable difference ( $P < 0.05$ ) between groups C and E1 in profit of the group with addition of probiotic Propoul. Statistically considerable difference ( $P < 0.05$ ) was repeatedly determined also on the 42. and the 49. day. On the 56. day of fattening was the difference between both groups statistically highly considerable ( $P < 0.01$ ) in profit of the group by using probiotic Propoul. The positive effect of probiotic Protexin Concentrate was fully shown on the 56. day of fattening. On this day was statistically recorded a considerable difference in profit group P2.

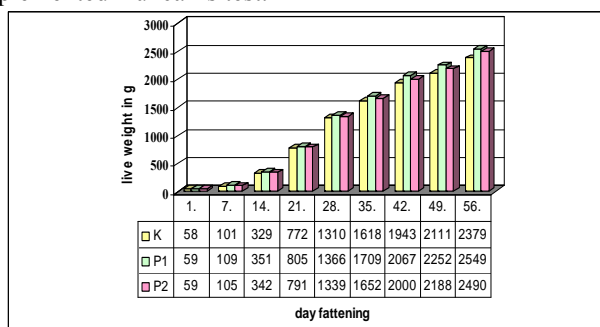


Figure 1. Compares achieved live weights of duck males in the watched groups

At the ranking of the daily average gain (Picture 2) we can state that the maximal growth was recorded on the broiler duck males on the 28. day of fattening. Until the 42. day of fattening was achieved the highest value of this parameter of duck males in the

group P1 with application of probiotic Propoul. The other way round, on the 49. and the 56. day of fattening duck males increased fastest with the application of Protexin Concentratu (group P2).

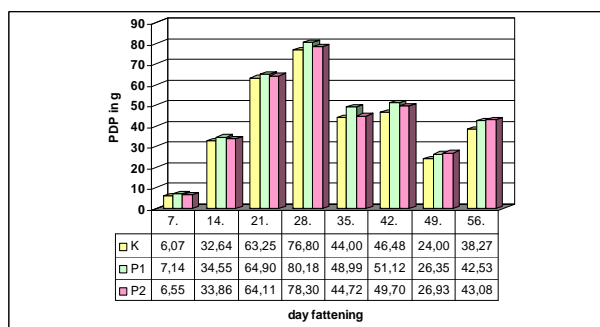


Figure 2. Compares achieved daily average increases of duck males in watched groups

The lowest consumption of feed was recorded at broiler duck males in group P1, where was achieved value of 2.59 kg. After this value group is being followed by group P2 with value of 2.61 and group K with value of 2.63 kg. The difference between experimental groups were 0.77 % in profit group P1. Between groups K and P1, or K and P2 was the difference 1.52 %, or 0.76 % in profit experimental groups. During fattening we recorded in group K without additive probiotic mortality of 3 pieces, what means 20.00 %. In both experimental groups (P1, P2) we recorded mortality of 2 pieces, what means 13.33%.

#### 4. Conclusions

On the base of achieved results of our experiment we can state that from used probiotic preparation was approved as the better Propoul. By its application at the end of fattening term we recorded by live weight in compare with checked group differences on the level of statistically considerable high difference for both sex.

The positive effect of probiotic Protexin Concentrate showed in small rate. By the duck males on the end of the fattening we had recorded statistically considerable difference in live weight with compared control group.

#### Acknowledgements

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#### References

1. Ishibashi, N., Yamazaki, S. (2001) - *Probiotics and safety*. Am. J. Clinic. Nutr., 73, 465-470.
2. Reid, G., Jass, J., Sebalsky, M.T. et al. (2003) - *Potential uses of probiotics in clinical practice*. Clin. Microbiol. Rev., 16, 658-672.
3. Capcarová, M., Kováčik, J., Mellen, M. (2009) - *Changes of biochemical parameters poultry blood after application of probiotic preparate*. Slovak University of Agriculture, Nitra, pp. 9-12