

# The influence of colored wheat feeding on broiler chickens performance parameters

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**Abstract:** The aim of this study was to determine effect of purple wheat Konini included in feed ratio for fattening male broilers of hybrid combinations Cobb 500. Konini wheat has a higher content of anthocyanins (14.01 mg / g) in grain. The content of crude protein in the common wheat was increased using wheat gluten to the identical in KONINI. In both feed mixtures was the same CP content. The effect on feed consumption, weight gain and carcass yield were evaluated. The content of purple wheat Konini in experimental diet was 78%. Control diet contains 78% of common wheat. We observed higher live weight (2530 ± 19.89 g SD) in Konini group. Average total feed consumption was 3.40 kg in Konini group. Effect on performance parameters was not significant (P > 0.05).

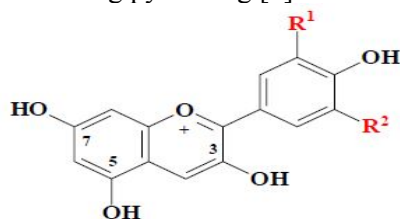
**Key-Words:** wheat Konini, anthocyanins, Cobb 500, nutrition of chickens

## Introduction

Wheat grain is considered as a good source of fiber, phenols, tocopherols and carotenoids.

Anthocyanins, another group of bioactive agents, are in blue and purple wheat grains. It is well known that herbal anthocyanins are functioning as antioxidants and, in addition, they have antibacterial and anti-carcinogenic effects as well [1]. In addition to white and red grains, wheats with purple grain may occur. Purple grain colour is caused by anthocyanins in the pericarp. Purple grains occur in tetraploid wheats from Ethiopia, and in one bread wheat accession apparently native to China [2].

Fig. 1 Structure of anthocyanins, which are formed by two benzene rings and an oxygen-containing pyran ring [3]



The aim of our experiment was to determine if replacement of common wheat Konini wheat not worsen performance parameters of broiler chickens.

## Material and Methods

202 chickens of hybrid combination COBB 500 were divided into 5 groups at the age of 19 days and were marked by the wing sign with number. They were breeding in balance cages. Room temperature and humidity were controlled. Lighting system was 16 hours light and 8 hours dark. Every group obtained ration with different content of purple wheat KONINI. Compositions of experimental rations are given in Table 1. Chickens were fed ad libitum. Approach to the water was permanent. Percentage of wheat was 78%. Content of Crude protein (CP) in the wheat KONINI was 16.8%. The content of CP in the common wheat was increased using wheat gluten to the identical in KONINI. In both feed mixtures was the same CP content. Ration was calculated using recommendations in [4].

Table 1 Composition of experimental rations

	KONINI	CONTROL
Wheat KONINI	78%	0%
Common wheat + gluten*	0%	78%
Soy-bean meal	13.1%	13.1%
Wheat starch	0.6%	0.6%
Monocalciumphosphate	0.7%	0.7%
Milled Limestone	0.3%	0.3%
Rapeseed oil	4%	4%
Premix - concentrate of microelements* *	3%	3%
Cr <sub>2</sub> O <sub>3</sub>	0.3%	0.3%

\*The content of CP in the common wheat was increased using wheat gluten to the identical in KONINI

\*\* lysine 60,0 g; methionine 75,0 g; methionine + cysteine 75,0 g; calcium 195,0 g; phosphorus 55,0 g per; sodium 46,0 g per kg; copper 4,0 mg; zinc 3,70 mg; tocopherol 1,50 mg; biotin 6,0 mg per kg and retinol 450 IU; calciferol 166,70 IU

The feed consumption were measured every day, chickens were weight in the 3-day intervals.

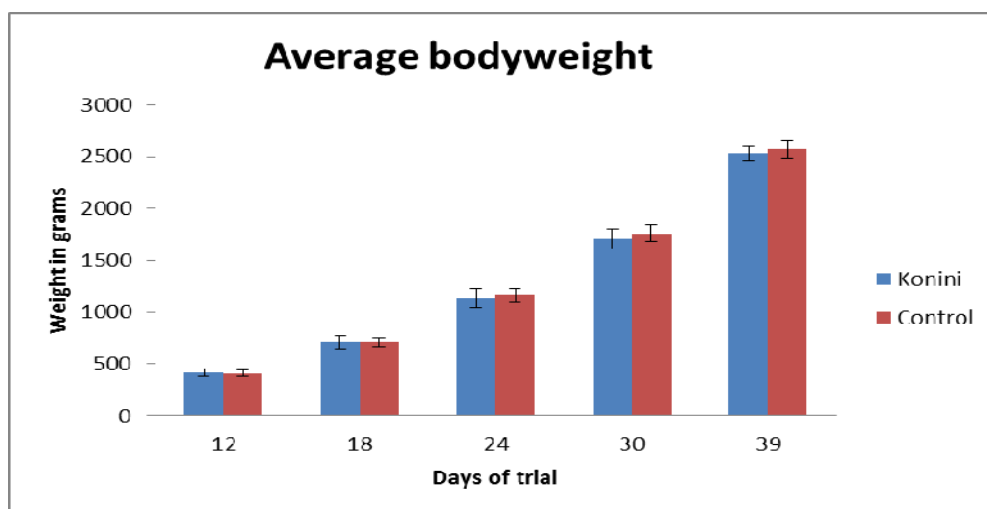
At the age of 39 days they were slaughtered and percentage of breast meat and leg meat (meat from thigh and drumstick without skin and bone) were calculated.

Data has been processed by Microsoft Excel (USA) and Statistica version 12.0 (CZ).

### Results and Discussion

At the end of trial we observed non-significant ( $P > 0.05$ ) higher weight ( $2530 \pm 19.89$  g SD in Konini group and  $2577 \pm 24.31$  g SD in Control group). Average bodyweight of cockerels are shown in figure 2.

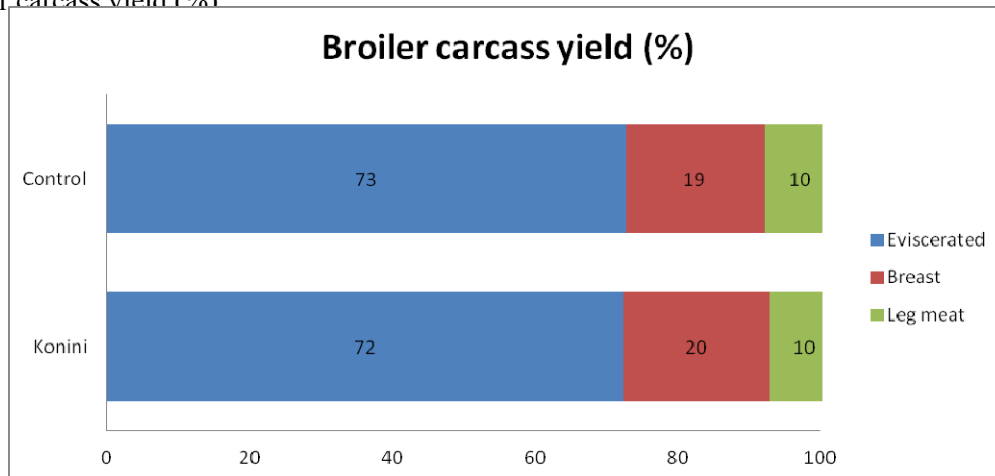
Fig. 2 Average bodyweight of chickens (g)



Average total feed consumption in the period from 19th to 39th day of life was in Konini group 3.40 kg and the control group 3.41 kg for chicken. The addition of Konini wheat had no significant influence on bodyweight gain even on carcass yield. Broiler carcass yield shows in Figure 3.

We observed that groups with wheat Konini and groups with common wheat to be balanced in our trial. These values are statistically non-significant ( $P > 0.05$ ). The average weight gain in a day of slaughter were  $2386 \pm 47.89$  g SD in a group of Konini and  $2380 \pm 38.00$  g SD in the control group.

Fig. 3 Broiler carcass yield (%)



Eviscerated carcass is calculated with feet and shanks removed from the hock joint. Boneless breast is as a percentage of live weight.

The highest carcass yield was found in the control group, the average carcass was  $72.71 \pm 0.74\%$  SD. The lowest values  $72.49 \pm 0.49\%$  SD was found in the Konini group. The results are not statistically significant. In [5] was the carcass yield higher (75%) to compare with our results. In [6] which feeding wheat Citrus is lower percentage of carcass yield (71.49%) to compare with our experiment. But the yield of breast (23.15%) and thigh muscle (15.88%) was higher than in our experiment.

Percentages of breast muscle of body weight were highest for experimental group Konini ( $20.32 \pm 0.69\%$  SD), while the lowest was observed in the control group ( $19.40 \pm 0.57\%$  SD). In the manual of hybrid Cobb 500 [5] are higher percentages of breast muscle (23.73%) of body weight to compare with our experiment.

Percentages of thigh muscle of body weight was attempted highest for Control group ( $10.29 \pm 0.65\%$  SD), while the lowest value was observed in experimental Konini group ( $10.10 \pm 0.58\%$  SD). The manual for the hybrid Cobb 500 [5] indicates a higher proportion of thigh muscle 14.14%.

## Conclusion

In the experiment has been found that feeding of purple wheat Konini does not significant effect ( $P > 0.05$ ) on performance parameters, namely feed consumption, weight gain and carcass yield compared to feeding control wheat. In the experiment it was found that even with the inclusion of 78% of color wheat Konini in the diet, was achieved a good results during of fattening and good carcass yield.

Konini wheat not worsen parameters of fattening and health condition of chickens.

## Acknowledgement

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