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The effect of diferent crude protein level and metabolic energy on performance and blood characteristic of broilers

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SUMMARY

A study was conducted to evaluate crude protein level and low energy supply on broiler production parameters. Three- hundred Ross 308-day-old broiler chicks were divided and placed in 3 cages (100 chicks/cage). Treatments consisted of a control diet (220 g/kg CP) formulated to meet NRC (National Research Council, 1994. Nutrient Requirements of Poultry. 9th ed(revised). NationalAcademy Press, Washington), a low crude protein diet (205 g/kg CP), and the third low crude protein diet (190 g/kg CP) with the same ratio 1:135-138 ME and crude protein in starter (first 21 days). Finisher (22 day till end) control diet consisted 200 g/kg CP, the second diet with low crude protein consisted 185 g/kg CP, and the third diet consisted 170 g/kg CP, with the ratio 1: 158 ME and crude protein. Feed intake tended to decrease with increasing crude protein and energy. Feed conversion (g gain per g feed) improved as crude protein and energy increased. Concentration of total protein, albumin, and creatine in blood serum were significantly lower (P<0,05) in second and third group. The values of research parameters have been statistically processed with a computer program for analysis of the variance (Statistica Stat Soft Inc., 2001).

Key words: protein level, low energy, metabolic profile, blood

INTRODUCTION

Determining the level of energy and protein of a diet is a probably the most important decision to be made in formulating diets for poultry. Energy alone contributes about 70% of the total cost of poultry diets(Skinner et al.,1992). Choosing the proper level of energy and protein will optimize growth, carcass quality and feed efficiency, while still allowing for profitable production is a major concern to any intergrator. In other hand feeding broiler chickens high crude protein (CP) diets is a costly metabolic process because excess amino acids must be catabolized.In some previous studies feeding low protein diets to broilers decreased growth performance (Ferguson et al., 1998; Jacobs et al., 1994; Jensen 1991). It is shoved that reducing CP diets by 2% in starter period did not affect Body Weight Gain (Parr and Summer, 1991; Moran and Stilborn, 1996).
The objective of these studies was to detremine the effects of dietary nutrient density on daily gain, body weight, feed conversion, blood picture and profitability.

MATERIALS AND METHODS

. Three- hundred Ross 308-day-old broiler chicks were divided and placed in 3 cages (100 chicks/cage). Treatments consisted of a control diet (220 g/kg CP) formulated to meet NRC (National Research Council, 1994. Nutrient Requirements of Poultry. 9th ed(revised). NationalAcademy Press, Washington), a low crude protein diet (205 g/kg CP), and the third low crude protein diet (190 g/kg CP) with the same ratio 1:135-138 ME and crude protein in starter (first 21 days). Finisher (22 day till end) control diet consisted 200 g/kg CP, the second diet with low crude protein consisted 185 g/kg CP, and the third diet consisted 170 g/kg CP, with the ratio 1: 158 ME and crude protein.

Chicks had ad libidum access to feed and water.
Body weight by pen and feed consumption were determined weakly (7,14,21,28,35,42 days of age).
At 35 days of age the blood was collected from the jugular vein (10ml) into the sterile vacuum tubes Venoject® (Sterile Terumo Europe, Leuven, Belgium). After that, the serum was separated by centrifugation (10 min) at 3000 revolutions/min and placed into the Olympus AU640. There have been found the concentrations of the biochemical indicators (urea, glucose, total proteins, albumin, cholesterol) and hematological indicators (hemoglobin)
Statistical analysis of data was performed by computer program STATISTICA (StatSoft, Inc.).

RESULTS

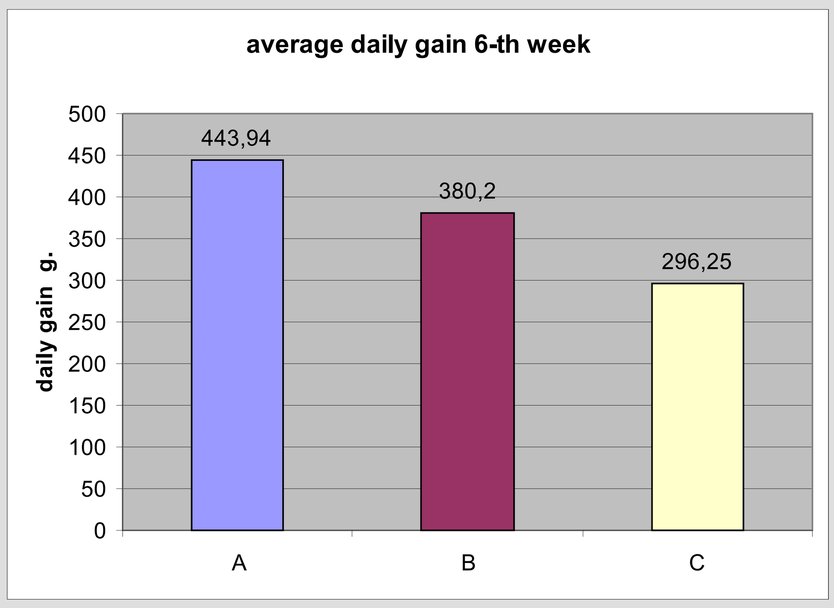

Figure 1.Average daily gain 6th week

	Group A	Group B	Group C
GLUKOSE mmol/l	11,24 c	12,2	12,81 a
UREA mmol/l	0,77	0,73	0,74
KREATININ mmol/l	6,2 bc	4,3 a	4,6 a
TOTAL PROTEINS g/l	34,04 bc	30,1 a	30,4 a
ALBUMIN g/l	12,59 bc	11,4 a	11 a
CHOLESTEROL mmol/l	3,16	3,62	2,54
TRIGLICERIDS mmol/l	1,48	1,55	1,37
HDL- CHOLESTEROL mmol/l	1,99 c	1,76	1,69 a
Fe mmol/l	21,47	19,38	15,23

Table 1. Biochemical indicators in broiler plasma during 35th day

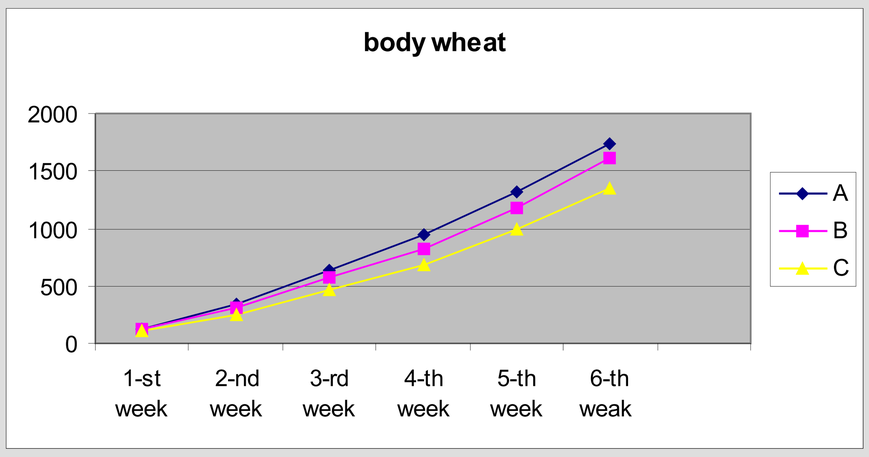

Figure 2. Body weight

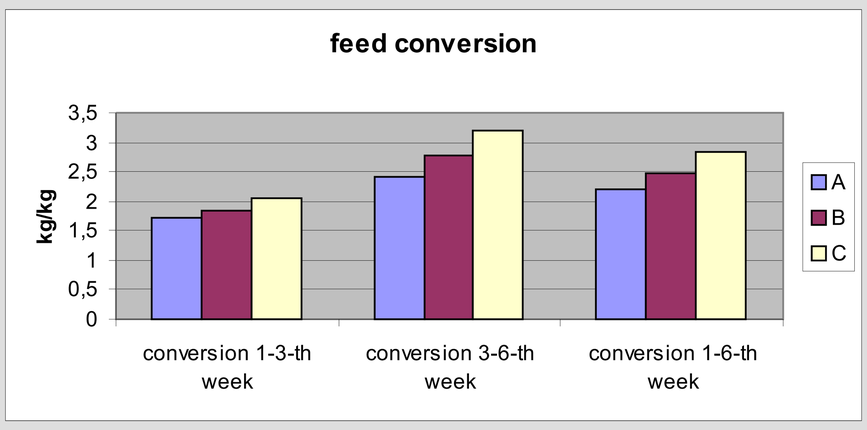

Figure 3. Feed conversion

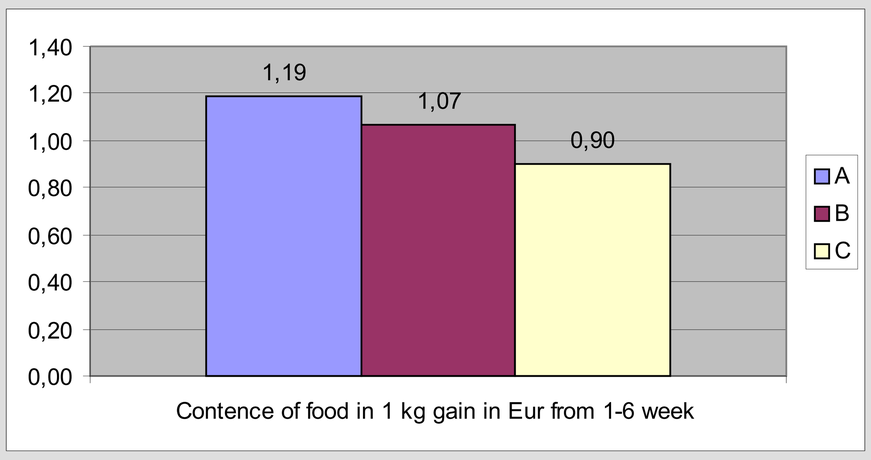

Figure 4. Contence of food in 1 kg gain in Eur from 1-6th week

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