Sudan University of Science and Technology  
College of Graduate Studies  

IN CAPTIVITY PERFORMANCE OF GUINEA FOWL  
(Numida meleagris) FED DIFFERENT LEVELS OF  
PROTIEN AND ENERGY  

أداء الدجاج الغيني في الأسر والمغذى على مستويات مختلفة من البروتين والطاقة  

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I
Dedication

To the soul of my father, who directed me in the right way
To my mother, brothers and my wife who encouraged me to
finish this thesis,
To my beloved sons Magzoub, Ahmed and Abd Elrahman.
To my friends...
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ABSTRACT

This study was undertaken to assess dietary CP and ME concentrations for optimum growth performance and carcass characteristics of helmeted guinea fowl (Numidia meleagris) meat. The nutrition of impact on performance, carcass quality, meat quality attributes, sensory characteristics, and nutritive value of guinea fowl meat was studied.

A total number of 150 day old guinea fowl Keets were randomly assigned to five pens. The five groups were offered starter' mash for adaptation and provided water ad. lib. until 10 days of age. Five Experimental diets were formulated as A(20.5% CP, 2990 kcal ME), B(high protein 26% :high energy3150 kcal), C (high protein26%: low energy2800 kcal), D (low protein 16% :high energy3150 kcal) and E (low protein 15% :low energy2750 kcal). Diet A served as the control ration. Feeding extended for 7 weeks during which performance parameters were recorded. At the end of the feeding period, five
birds from each group were randomly weighed and slaughtered and carcass and meat quality attributes were assessed.

The final live weight in groups B (656.82±0.01) and C(735.11±0.01) and the weight gain in group B (600.98±0.01) and C (678.98±0.01) were not significantly (P>0.05) higher than the other treatment groups. Feed intake in group D(917.47±0.010) was not significantly lower than the other groups. Feed conversation ratio (FCR) of group D(3.035±0.007) and E (3.06±0.003) were similar. There was no significant difference (P>0.05) no variations in dressing-out percentages between the control (72.5±0.9) and the test groups except for group D(69.8±0.72).

Meat quality parameters of selected cuts were not significantly (P>0.05) similar in colour. Water holding capacity of group B (1.537±1.03) and E (2.22±0.10) were not significantly (P>0.05) different higher than the control and test groups, while water holding capacity of group C(0.88±0.11) was the lower one (P>0.05). Cooking loss in group D(22.85±3.28) was significantly different (P<0.01) higher than the test groups. Shear force in groups D (3.009±0.1) and E (3.57±0.32) were not significantly (P>0.05) different higher than the control and the test groups.

There were also non-significant (P>0.05) differences in the sensory evaluations among the control and test group.

Blood parameters including Hb, PCV, and WBCs counts were also studied in guinea fowl with resultant not significant differences (P>0.05) between the groups. The normal
values of Alkaline phosphates (ALP), Creatine kinase (CK), Aspartate amino-transaminase (AST), Lactate dehydrogenase (LDH), blood sugars, creatinine, total protein, total albumin, and the minerals sodium, phosphor, calcium and potassium were determined in the sera of the birds. The changes in these parameters remained within normal ranges and could be considered not significant.

The results of this study indicated that good efficiency gain was observed when feeding guinea fowl concentrate ration with 26% CP and 2800kcal/kg ME. till eight weeks of age.
وطاقة، (ب) بروتين عالي (2990 kcal)، و العليقة (ب) مع طاقة منخفضة (3150 kcal)، و العليقة (ج) بروتين منخفض وطاقة عالية (2800 kcal) وأخيرا العليقة (ه) بروتين منخفض (15%) وطاقة منخفضة (750 kcal) وتلت النزعة في إضاءة طوال ال 24 ساعة مع توفير العلف والماء على طول اليوم، استمر الإعلاف لمدة 7 أسابيع أخذت خلالها قياسات الأداء وذلك لحساب الوزن، الوزن المكتسب، العلف المستهلك وكفاءة التحويل الغذائي وبنهاية فترة الإعلاف تم ذبح عدد 5 طيور عشوائيا من كل مجموعة وتم تقييم جسد الذبيح ومناحي جودة اللحم.

كان الوزن النهائي (كجم) في المجموعة (ب) (0.01±0.01) و المجموعة (ج) (735.11±0.01) و كسب الوزن في مجموعة الاختبار (ب) (600.98±0.01) و (ج) (0.01+678.98) اعلى من مجموعات الاختبار الاخرى ولم توجد فروق معنوية (أ<0.05). معدل الماكول في مجموعة الاختبار (د) (0.01) اقل من مجموعات الاختبار الأخرى ولم توجد فروق معنوية (أ<0.05).

تشابه معدل التحويل الغذائي في المجموعة (د) (0.007±0.003) والمجموعة (ه) (0.010±0.003) ولم توجد فروق معنوية (أ<0.05).

نسبة التصافى بين المجموعة المرجعية (72.5±0.9) و مجموعات الاختبار الأخرى متشابه وأظهرت فروق غير معنوية (أ<0.05) ماعدا المجموعة (د) (69.8±0.72). خصائص لون اللحم في القطع المختارة متشابه وأظهرت فروق غير معنوية (أ<0.05) بينما قدرة امساك الماء في المجموعة (ب) (1.03±1.537) والمجموعة (ه) (2.22±0.10) اعلى من مجموعات الاختبار والمجموعة المرجعية ولم تظهر فروق معنوية (أ<0.05) في حين اظهرت المجموعة (د) قدرة امساك قليلة للماء مقارنة مع المجموعة المرجعية (0.88±0.11) ومجموعات الاختبار الأخرى.
فقد الطهي في المجموعة (د) (22.85±3.28) سجل أعلى نسبة واظهر فروق معنوية (أ<0.05) وقوة القطع للمجموعة (د) (0.1±0.09) والمجموعة (ه) أعلى من مجموعات الاختبار والمجموعة المرجعية وأظهرت فروق غير معنوية (أ>0.05). لم يكن هناك اختلاف معنوي (أ>0.05) بين المجموعات في التقييم الأطباعي للحم.

دراسة تمّت خصائص الدم ولم تتكن هناك أي فروقات معنوية (أ>0.05) بين الهيموجلوبين والكربونات البيضاء والحجم التراكمي للكريات الحمراء. تمّ أخذ عينات من مصل الدم لتحديد نسبة إنزيم الفوسفات القلوى، ومحرك الكريتين ونافل أمينو الإسطبل، ونافل هيدروجين اللاكتيد، وذلك تحديد نسبة السكر، والكربونات والبروتينات والألبومين، وأملاح الصوديوم والفوسفور والكالسيوم والبوتاسيوم وظلت قيم هذه القياسات في المدى الطبيعي لها و لم تكن هناك أي فروقات معنوية (أ>0.05).

كشفت نتيجة هذه الدراسة أن أمثل مستوى من البروتين والطاقة لتغذية الدجاج الغني في المناطق المدارية هو نسبة 26% بروتين خام مع 2800 كيلو طاقة وذلك خلال الأسبوع الثامن من العمر.