

**EFFECT OF DIETARY HOT RED PEPPER AND
ENERGY LEVELS ON PERFORMANCE OF GROWING
AND LAYING JAPANESE QUAIL**

BY

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THESIS

Submitted in Partial Fulfillment of the Requirements for the
Degree of

M. Sc.

In
Agricultural Science (Poultry Nutrition)
Poultry Production Department
Faculty of Agriculture

Fayoum University

2008

SUMMARY AND CONCLUSION

The experimental work of the present study was carried out at the Poultry Research Farm, Poultry Production Department, Faculty of Agriculture, El-Fayoum University. Chemical analyses were performed in the laboratories of the same department according to the procedures outlined by *A. O. A. C. (1990)*.

At growing period, an experiment was designed to study the effect of feeding growing Japanese quail on diets various levels (0.0, 1.5 and 3.0 %) of hot red pepper (HRP), at two levels of metabolizable energy (2700 and 2900 Kcal ME/Kg). A total of 360 week old Japanese quails were divided into 6 experimental groups of approximately similar body weight. Each group consisted of 3 replicates of 20 birds each. Each group was fed one of the six experimental diets from 7 to 38 days of age in each experiment.

At laying period, the present experiment was carried out to investigate the effect of HRP in diets with two energy levels on performance of laying hens, egg quality, some blood constituents, fertility %, hatchability % and economic efficiency. 432 Japanese quail hens, 6 week old were randomly distributed into six treatments fed 6 different diets containing two levels of ME (2700 and 2900 Kcal ME/Kg) without or with 1.5 and 3.0 % HRP. The experiment lasted for 2 months.

The results obtained could be summarized as follows:

1. Growing period:-

1.1. Chemical composition of HRP:-

The proximate analysis of hot red pepper (HRP) showed that HRP contained, on dry matter basis, 7.07, 3.46, 32.03, 27.36 and 30.08 %, for ash, EE, CF, CP and NFE; respectively.

1.2. Growth performance:-

Growing Japanese quail fed diets containing 1.5 or 3.0 % HRP had no significant effect of LBW and LBWG during the whole period. However, a lower dietary ME level (2700 Kcal /Kg) had a significant affect on LBWG. Concerning the interaction, results showed that a significant improvement on LBWG of birds fed D6 (3.0 % HRP, 2700 Kcal ME/Kg).

Concerning FI, the control and 1.5 % HRP diets resulted in higher value ($P < 0.05$) compared to 3.0 % HRP diet. Also, birds fed 2700 Kcal ME/Kg ate

($P < 0.01$) higher feed than those fed the higher diet (2900 Kcal ME/Kg). Also, more feed was significantly obtained when birds fed D6 (3.0 % HRP, 2700 Kcal ME/Kg) during the whole period.

The results showed that no significant differences were observed on FC values due to HRP diets. However, during the whole period, the higher level of ME resulted in ($P < 0.05$) better value of FC than the lower on, and D3 (3 % HRP, 2900 Kcal ME/Kg) was the best.

1.3. Carcass characteristics:-

No significant effect in all carcass traits due to HRP diets were observed except for feather and giblets. Also, insignificant effect in all carcass traits due to ME diets except blood and neck weights. Regarding interaction between HRP and ME diets, there were no significant effect on carcass traits except blood, neck, giblets and abdominal fat. And birds fed D6 (3.0 % HRP, 2700 Kcal ME/Kg) had ($P < 0.05$) lower abdominal fat %.

1.4. Chemical composition of quail meat:-

Feeding of HRP or ME diets was not significantly affected moisture, CP, EE, ash and NFE % of meat. However, birds fed D3 (3 % HRP, 2900 Kcal ME/Kg) significantly had higher CP %, while the others had no effect.

1.5. Some plasma constituents:-

Results showed that HRP diets had significantly lower values of plasma GOT, cholesterol and triglycerides, and higher ($P < 0.05$) values of glucose. However, plasma total protein had no significant effect. And a dietary ME levels of 2700 Kcal ME/Kg caused lower values ($P < 0.05$) of GOT, GPT, triglycerides and glucose. Birds fed D6 (3 % HRP, 2700 Kcal ME/Kg) had significantly lower values of GOT, GPT, triglycerides and glucose.

1.6. Sensory evaluation of cooked meat:-

The overall acceptability of the cooked meat did not differ due to addition of red pepper (0.0, 1.5 and 3.0 %) and dietary ME levels.

1.7. Salmonella content of the gastrointestinal tract of quail:-

Feeding birds dietary 1.5 or 3.0 % HRP within any ME levels (2700 or 2900 Kcal ME/KG) resulted in cleaning gastrointestinal tract from Salmonella.

1.8. Economical efficiency:-

From the economical point of view, it can be noted that D4 (0.0 % HRP, 2700 Kcal ME/Kg) was the best diets.

2. Laying period:-

2.1. Laying performance:-

The results showed that either dietary HRP or ME levels insignificantly improved egg number, egg production, egg weight and egg mass. While feed intake ($P < 0.01$) decreased with HRP diets (1.5 or 3.0 %) and with low energy diet (2700 Kcal ME/Kg). And birds fed D6 (3.0 % HRP, 2700 Kcal ME/Kg) consumed ($P < 0.01$) less feed than those received D1 (0.0 % HRP, 2900 Kcal ME/Kg). Dietary HRP (1.5 or 3.0 %) and lower energy level (2700 Kcal ME/Kg) significantly improved feed conversion, and birds fed diets 2, 3, 5 or 6 ($P < 0.05$) utilized the feeds more efficiently than those fed D1.

Mortality rate was within the normal range, not exceed about 3-7 %. Postmortem investigation indicated no relationship between treatments and mortality rate.

2.2. Egg quality:-

There were no significant effects of either dietary HRP, ME levels or interaction on albumin, yolk and shell weights %. However, Haugh units significantly increased with increasing ME levels from 2700 to 2900 Kcal ME/Kg, but HRP levels had significantly lower values, and the birds fed D1 (0.0 % HRP, 2900 Kcal ME/Kg) scored the highest values. Regarding shell thickness, HRP diets had no significant effect, but the higher ME level had higher value compared to the lower one. Yolk color was improved significantly by HRP diets; ME levels had no significant effect and diets 3 (3.0 % HRP, 2900 Kcal ME/Kg) or 6 (3.0 % HRP, 2700 Kcal ME/Kg) had the highest value. The improvement in yolk color of HRP supplementation group may be due to pigment content of hot pepper.

2.3. Some blood plasma constituents:-

Different dietary HRP, energy levels or interaction did not significantly affect blood plasma albumin, globulin, total protein, calcium, glucose and total lipids. However, birds fed HRP and higher ME levels had significantly less GOT and GPT values, and D5 (1.5 % HRP, 2700 Kcal ME/Kg) had the lower values. There was insignificant effect in cholesterol values due to either dietary

HRP or ME levels. However, there was ($P < 0.05$) interaction effect, where D1 (0.0 % HRP, 2900 Kcal ME/Kg) had the lowest value.

2.4. Fertility and hatchability:-

Results showed that HRP or 2700 Kcal ME/Kg diet had significant improvement on fertility or hatchability of fertile eggs with Japanese quail hens. Also, D5 (1.5 % HRP, 2700 Kcal ME/Kg) seemed to be adequate for optimum fertility and hatchability percentage.

2.5. Economical efficiency:-

Regarding economical point of view, results showed that the most economical treatment was obtained (132 %) when 1.5 % HRP was added to the diet containing low energy level (2700 Kcal ME/Kg). It can be concluded that D4 (0.0 % HRP, 2700 Kcal ME/Kg); and D5 (1.5% HRP, 2700 Kcal ME/Kg) were the best ones fed to Japanese quail during growing and laying periods; respectively.