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SUMMARY AND CONCLUSION

Conventional source of protein, especially soybean meal is the most important source of protein in poultry diets. In recent years, other plant oil seeds meals have been examined in poultry diets as a non-conventional sources and to substitute other expensive conventional feed protein sources .

The present experimental work was carried out at Malloway Poultry Research Station, Animal Production Research Institute, Agricultural Research Center, Ministry of Agriculture, Egypt. During 2001 in order to evaluate Nigella seed meal as feedstuffs in poultry diets.

A total number of 400 unsexed one day- old Gimizah local strain chicks of similar initial live body weight were randomly distributed into 4 groups, each in 2 replicates.

The first group was considered as the control group, the parts of Nigella seed meal instead of soybean meal on the basis of protein units at level of 10 %, 30 % and 50 % for the second, third and fourth group, respectively. Also, the diet in first subgroup in each treatment was supplemented with pronifer (2 kg / tone feed) , while, the second diet in the second subgroup was not supplement with pronifer. Accordingly, sixteen experimental diets were formulated to contain about 19.20 % C P and 3054 kcal ME / kg during grower period (1 – 4 weeks) and 17.1 % C P with 3100 kcal ME / kg feed during the finisher period (5 – 12 weeks). Feed and water were offered *ad – libitum*, and birds were kept under similar conditions of light, heat and medical care allover the experimental period.

Data were obtained by applying and using the measurements such as : weekly live body weight, body gain, feed consumption and feed conversion.

At the end of the experiment, 3 males were randomly chosen from each treatment. The birds were fasted for 12 hours, then, individually weighed, slaughtered and feather was plucked. The dressing weight percentage was calculated on the basis of starved body weight, also, each of carcass component was proportionate to the live body weight.

Carcasses were processed by dividing the carcass into two equal halves, and the right half was used for chemical analysis of the breast and thigh meat. Both breast and thigh of each carcass were weighted twice, in air and under water to determine specific gravity.

Blood samples were taken at the time of slaughtering to determine plasma total protein, albumin and globulin.

The results obtained as well as the conclusion could be summarized as follow :

Proximate analysis, mineral and amino acids content.

- 1 – The results indicated that NSM contained 6.98 %, 31.92 %, 16.31 %, 14.59 %, 6.01 % and 24.19 % for moisture, crude protein, ether extract, crude fiber, ash and NFE, respectively.
- 2 – NSM had high percentages of iron and magnesium and considerable amounts of zinc, manganese, phosphorus, calcium, sodium and potassium.
- 3 – The results indicated that NSM is rich in threonine, methionine, isoleucine, phenylalanine and histidine and deficient in leucine, lysine and arginine.

Growth Performance traits.

- 1 – At 12 weeks of age, the highest value of live body weight was recorded in 10 % level followed by 30 % level, while, the lowest value was

- observed in 50 % level, with a decrease of 4.07 in body weight than the control group.
- 2 – The supplementation diets with either 10 % or 30 % Nigella seed increased body gain by (18.6 %) and (18.78 %) respectively than those un-supplemented diets at 12 weeks of age .
 - 3 – The supplementation of Gimizah chicks diets with 10 % and 30 % (low level) Nigella seed meal instead of SBM increased accumulative feed consumption by 11.01 % and 10.17 % respectively when compared to control diet.
 - 4 – The supplementation of Nigella seed meal in Gimizah chick diets by 10 % and 30 % instead of soybean meal improved feed conversion by 8.87 % % and 10. 48 % , respectively when compared to control group.

Carcass Traits and chemical analysis :

- 1 – There were highly significant differences for protein substitution levels in dressing percentages, while there were no significant differences in chest percentages among different levels of substitution of NSM instead of BSM. Also no differences were in back, neck, and giblets percentages. On the other hand there were significant differences in thigh yield percentages among different levels of NSM.
- 2 – Results of chemical analysis in chest meat as affected by NSM levels, indicated that the substitution of NSM protein instead of SBM protein provided chest meat with appropriate amount of EE, whereas, moisture and ash contents were decreased with increasing NSM levels.
- 3 – The supplementation of diets with high levels of Nigella seed meal (30 % or 50 %) decreased moisture content and increased crude protein content in thigh meat compared to control groups, while the ether

extract increased with increasing NSM levels. The ash content in thigh meat was decreased with increasing NSM level.

immunity Parameters :

- 1 – The value of white blood cells was increased with increasing the level of NSM from 10 % to 30 %, while it was decreased at 50 % level.
- 2 – There were no changes in spleen and bursa of fabricia weights due to feeding different levels of NSM instead of SBM.
- 3 – The viability rates lie within the normal range and mortality rate could be attributed to the accidental factors and not to the experimental treatments.

Blood Protein Factions :

There were significant differences in total protein and albumin among different treatments. It was also found that, the total protein and albumin were increased in those treatments which contained low levels of NSM (i.e 10 % and 30 %).

Specific Gravity :

- 1 – The specific gravity for thigh meat was higher than (1.0684) that recorded in chest meat (1.0651).
- 2 – In respect of correlation coefficients between specific gravity and chemical analysis of chest meat, there were significant correlation coefficients between specific gravity and both of moisture (0.5226) and ether extract (0.5048) .

- 3 – the correlation coefficients between specific gravity and chemical constituents of thigh meat indicated that, there were highly positive significant correlation coefficients between specific gravity and both of moisture (0.6215) and EE (0.6558).
- 4 – There were positive highly significant correlation coefficients between moisture and each of EE (0.7381) CP (0.6163) and ash (0.6255). Moreover, there was a significant correlation coefficient between EE and ash (0.6704).

In Conclusion :

- 1 – Nigella seed meal could be considered as a rich source in protein and also energy since it contains a considerable amount of ether extract and NFE.
- 2 – The Nigella seed meal has a considerable amount of amino acids that could support growth of chicks.
- 3 – The Nigella seed meal could be used as a protein substitution instead of soybean meal up to 30 % without any detrimental effects on body weight.
- 4 – The moisture and ether extract of both chest and thigh meat could be determined through specific gravity, whereas, the ash percentage can be determined via moisture percentage and then, the crude protein percentage by difference.
- 5 – The specific gravity is a useful predictor of moisture and ether extract in both chest and thigh meat of Gimizah chicks at 12 weeks of age. The obtained regression models “ prediction equations) could be used to determine moisture and ether extract rapidly and at low cost. Nevertheless, further investigations are required to evaluate the stability of the obtained models under field conditions.