

SUMMARY

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This work was carried out at El-Khanater El-Khairia, Poultry Research Station. Animal Production Research Institute, Agricultural Research Center, Ministry of Agriculture, Giza, Egypt, A.R.E.

The objectives of this experiment were to:

1- Evaluate the efficiency of sunflower raw and processed seeds as well as meal as a source of protein and energy in broiler's rations

2- Study the effect of graded levels of sunflower raw and steam heated seeds and sunflower meal as well in broiler rations on productive performance and some blood constituents as parameters of metabolic processes.

Two experiments were conducted to fulfill the previously mentioned objectives:-

I- The first experiment:

Total number of 231 one-day old Arbor Acer broiler chicks were fed on commercial diet during the first 13 days of age as a pre-experimental period. At the 14th day, birds were wing banded and individually weighed to the nearest 5 grams after fasting overnight, and randomly divided into 7 groups (each of 33 chicks).

Birds of each group were fed ad lib one of the following experimental diets which were formulated to be isonitrogenous, isoenergetic and containing approximately

18% CP (12% from yellow corn and soya-bean meal and 6% from sunflower ground raw or processed seeds or meal):

Group 1- Corn-soya diet (control).

Group 2- Raw sunflower ground seeds.

Group 3- Steam heated sunflower ground seeds (at 121 °C for 15 minutes).

Group 4- Steam heated sunflower ground seeds (at 121 °C for 30 minutes).

Group 5- Dry heated sunflower ground seeds (at 120 °C for 15 minutes).

Group 6- Dry heated sunflower ground seeds (at 120 °C for 30 minutes).

Group 7- Sunflower meal.

Digestible coefficients of nutrients were determined at the second week after applying the tested diets.

Serum total protein, albumen, globulin, total lipids, cholesterol, glucose, alkaline phosphatase, transaminases, uric acid and creatinine were taken as blood parameters and estimated at the 14th and 28th day of chick's age.

Protein consumption, body weight gain and total protein efficiency (T.P.E.) were estimated at the 28th day of age.

II- The second experiment:

Total number of 210 day-old Arbor Acer broiler chicks were used in this experiment. Chicks were fed a commercial

diet for the first week of age, after which, they were randomly divided into 7 groups each of 30 chicks.

The experimental groups fed isonitrogenous and isoenergetic diets containing:

Group 1- Corn-soya diet (control).

Group 2- 10% Raw sunflower ground seeds.

Group 3- 20% Raw sunflower ground seeds.

Group 4- 10% Steam heated sunflower ground seeds (at 121° C for 15 minutes).

Group 5- 20% Steam heated sunflower ground seeds (at 121° C for 15 minutes).

Group 6- 10% Sunflower meal.

Group 7- 20% Sunflower meal.

Live body weight and weight gain were measured individually and weekly to the nearest 5 grams. Feed intake per chick was calculated every 7 days.

Parameters of carcass quality were detected at the end of the experimental period (8 weeks) on a random sample of 3 birds from each treatment.

Chemical analysis of blood serum was carried out at the 7th and 56th day of chick's age as in the first experiment.

The results obtained could be summarized as follows:

1- Heat processing of sunflower seeds resulted in increasing nitrogen free extract, while crude protein,

ether extract, crude fibre and ash decreased slightly in most cases

2- The digestion coefficient of crude protein ranged from 58.04 to 69.14% being higher in ration containing steam heated sunflower seed (for 15 minutes), followed by that containing full-fat raw sunflower seeds (63.17). However, the lowest coefficient value (58.04%) was observed in ration containing dry heated sunflower seeds for 30 minutes.

3- The determined metabolizable energy value of different experimental diets ranged from 3.0028 kcal./gm. in diets containing dry heated sunflower seeds for 15 minutes to 3.2329 kcal./gm. in diets containing steam heated sunflower seeds for 15 minutes.

4- Processed sunflower seeds showed significant effect on serum total lipids, cholesterol, GOT and uric acid only.

5- Treating sunflower seeds with either steam or dry heating (except steam heating for 15 minutes) decreased total protein efficiency, ($P < 0.01$).

6- Both live weight and weight gain increased by increasing the diet content from sunflower raw or steam heated seeds. However, diets containing 20% sunflower meal decreased both live weight and weight gain for chicks, than did the diet containing 10% sunflower meal only.

7- Adding sunflower raw or processed seeds as well as meal increased the amount of feed consumed than control.

8- Higher feed efficiency average (0.46) was observed in chicks fed diet containing 20% steam heated sunflower seeds, followed by those fed 10% or 20% raw sunflower seeds (0.44).

9- Applying raw sunflower seeds with the rate of 10% or 20% in broiler rations had similar effect on total edible meat, carcass and giblets. However, applying steam heated seeds with a rate of 20% had the best effect on average of absolute weights of total edible meat and carcass when compared with that of 10%.

In addition applying sunflower meal with a rate of 20% in broiler diets decreased the averages of absolute weights of total edible meat and carcass when compared with the corresponding amount of raw or processed seeds.

10- Age of birds showed significant ($P < 0.01$) effect on various serum blood parameters estimated except on serum creatinine level which showed no significant response to this factor.

11- Averages of all serum blood parameters increased significantly as birds grew older with different rates according to estimated parameter.

12- Applying experimental diets showed significant effect ($P < 0.01$) on serum content of total proteins, albu-

men, cholesterole, glucose, GPT and uric acid. While serum globulin, total lipids, alkaline phosphatase, GOT and criatinine showed no significant response to experimental rations.

13- Feeding experimental birds diets containing 20% sunflower steam heated seeds increased the levels of serum total proteins, albumen and GOT than did any other treatment applied. While birds fed diet containing 20% raw sunflower seeds had the highest levels of serum total lipids, cholesterole, uric acid and criatinine when compared to the other experimental diets. On the other hand broiler chicks fed diet containing 10% raw sunflower seeds had the loest averages of serum total proteins, albumen, globulin, alkaline phosphatase, GPT and criatinine.