

Research Article

UTILIZATION OF SUNFLOWER CAKE AND ITS EFFECT ON GROWTH AND CARCASS TRAITS IN JAPANESE QUAILS

Srinivasan G. and *Jeichitra V.

Department of Poultry Science, Madras Veterinary College, Chennai – 600007, India

*Author for Correspondence

ABSTRACT

Day old 600 Japanese quail chicks were equally and randomly distributed into ten treatment groups of two replicates having 30 chicks in each. All the chicks were reared on cages upto six weeks of age. The chicks in control group were fed corn-soya based diet with no multi-enzyme group. Treatment groups were fed on diets containing 25, 50, 75 and 100 per cent levels of sunflower cake replacing the protein mix consisting of 60% groundnut cake and 40% DORB on an isolysine, isomethionine, isocaloric and isonitrogenous with no multi-enzyme supplementation and, similar treatment groups were fed with multi-enzyme supplementation. Highly significant ($P<0.01$) differences were noticed between the treatments for six weeks body weight. Quails performed better up to 50 per cent replacement levels. The feed efficiency in different treatments showed highly significant variation ($P<0.01$) and was the best between 25 to 50 per cent replacement levels. Neither the dietary treatment nor the enzyme supplementation influenced the livability and carcass traits.

Key Words: Japanese Quails, Protein Mix, Sunflower Cake, Multi-Enzyme, Carcass Traits

INTRODUCTION

In Japanese Quail farming comparatively higher nutritional requirement, poor feed efficiency, short supply of ingredients, increase in prices of most of the feed ingredients result in high cost of production. Sunflower oil cake is the cheaper source of vegetable protein among all the vegetable protein sources available and, is also rich in fibre which limits its utilization but could be enhanced through enzyme supplementation. Hence, the present study was undertaken to analyse the effect of Sunflower oil cake on growth, mortality and carcass quality of Japanese quails at different levels of its inclusion replacing the protein mix.

MATERIALS AND METHODS

Day old 600 Japanese quail chicks were equally and randomly distributed in to ten different treatment groups (T0, T1, T2, T3, T4, T5, T6, T7, T8 and T9) of two replicates with 30 chicks in each. A protein mixture consisting of 60% groundnut oil cake and 40% deoiled rice bran was prepared and used as major protein source (31.4%) in the control diet (T0). All the chicks were raised in well ventilated cages. The experimental diets were formulated (Table 1)

Table 1: Composition of the ration

Sr. No.	Ingredients	Control	25%	50%	75%	100%
1	Maize	40	40	40	40	40
2	Protein mix	38	28.5	19	9.5	0
3	SFOC	0	9.5	19	28.5	38
4	Soyabean meal	10	10	10	10	10
5	Fishmeal	10	10	10	10	10
6	Mineral mixture	2	2	2	2	2
7	Vitamin mixture	0.1	0.1	0.1	0.1	0.1
8	Total	100	100	100	100	100
9	CP (%)	24.23	24.29	24.34	24.40	24.40
10	ME (Kcal/kg)	2647	2646	2645	2644	2643
11	E/P ratio	109.24	108.93	108.66	108.36	108.31

Research Article

Table: 2 Performance of quails

	T0	T5	Pooled	T1	T6	Pooled	T2	T7	Pooled	T3	T8	Pooled	T4	T9	Pooled
Initial live body weight (g)	39.36 ± 1.18	36.25 ± 0.64	37.80 ± 0.91 ^a	36.96 ± 0.70	40.63 ± 0.94	38.79 ± 0.82 ^a	36.80 ± 0.52	38.68 ± 0.97	37.74 ± 0.74 ^a	35.97 ± 0.78	36.91 ± 0.63	36.44 ± 0.70 ^a	41.92 ± 1.09	36.27 ± 0.62	39.09 ± 0.85 ^a
Final live body weight (g)	159.47 ± 2.52	159.79 ± 2.37	159.63 ± 2.44 ^{ab}	159.65 ± 1.93	163.43 ± 2.37	161.54 ± 2.15 ^{bc}	162.09 ± 2.14	163.22 ± 2.44	162.65 ± 2.29 ^c	159.83 ± 2.50	159.63 ± 2.45	159.73 ± 2.47 ^{abc}	157.97 ± 2.36	160.59 ± 2.40	159.28 ± 2.38 ^a
Feed efficiency	4.33 ± 0.10	4.30 ± 0.08	4.32 ± 0.09 ^b	4.31 ± 0.01	4.23 ± 0.05	4.27 ± 0.03 ^a	4.26 ± 0.06	4.24 ± 0.04	4.25 ± 0.05 ^a	4.30 ± 0.05	4.31 ± 0.03	4.31 ± 0.04 ^b	4.34 ± 0.08	4.28 ± 0.08	4.31 ± 0.08 ^b

Table: 3 Caracass traits of quails

	T0	T5	Pooled	T1	T6	Pooled	T2	T7	Pooled	T3	T8	Pooled	T4	T9	Pooled
NYDW (%)	85.72 ± 3.53	82.14 ± 2.59	83.93 ± 3.06 ^a	85.71 ± 2.33	81.67 ± 2.05	83.69 ± 2.19 ^a	83.54 ± 3.72	83.49 ± 0.70	83.51 ± 2.21 ^a	81.90 ± 2.24	84.27 ± 2.50	83.08 ± 2.37 ^a	82.24 ± 2.73	82.64 ± 3.20	82.44 ± 2.96 ^a
EW (%)	60.48 ± 0.59	59.97 ± 1.11	60.22 ± 0.85 ^a	59.46 ± 1.77	61.08 ± 1.32	60.27 ± 1.54 ^a	59.74 ± 1.38	60.52 ± 1.26	60.13 ± 1.32 ^a	61.55 ± 0.97	60.22 ± 1.09	60.88 ± 1.03 ^a	61.70 ± 0.78	60.32 ± 1.56	61.01 ± 1.17 ^a
GW (%)	6.30 ± 0.41	6.23 ± 0.48	6.26 ± 0.44 ^a	5.91 ± 0.41	5.58 ± 0.42	5.74 ± 0.41 ^a	5.78 ± 0.25	5.77 ± 0.39	5.77 ± 0.32 ^a	5.14 ± 0.48	6.02 ± 0.41	5.58 ± 0.44 ^a	5.33 ± 0.48	5.90 ± 0.72	5.61 ± 0.60 ^a
RCY (%)	66.78 ± 0.90	66.20 ± 1.16	66.49 ± 1.03 ^a	65.37 ± 2.96	66.77 ± 1.42	66.07 ± 2.19 ^b	65.52 ± 1.51	66.29 ± 1.27	65.90 ± 1.39 ^a	66.69 ± 1.01	66.24 ± 1.27	66.46 ± 1.14 ^a	67.09 ± 0.94	66.23 ± 1.80	66.66 ± 1.37 ^a
OW (%)	18.94 ± 0.85	15.94 ± 0.57	17.44 ± 0.70 ^a	16.52 ± 0.84	15.40 ± 0.35	15.96 ± 0.50 ^a	18.12 ± 1.24	17.20 ± 0.89	17.66 ± 1.06 ^a	15.23 ± 0.18	18.03 ± 0.46	16.63 ± 0.32 ^a	15.57 ± 0.40	16.41 ± 0.39	15.99 ± 0.39 ^a

The composition of T5 to T9 diets werw similar to T0 to T1 respectively except for the addition of 500 gm of enzyme mix per tone contained cellulose 2000, Hemicellulase 2500, glucosidas 245, pectinase 850, protease 48000 and amylase 11000 IU per gram on isolysine (1.3%) and isomethionine (0.5%)

Research Article

basis according to NRC standards (1977). The control diet was replaced by sunflower oil cake at graded levels on isolysine, isomethionine, isocaloric and isonitrogenous basis in other four treatments (T1, T2, T3 and T4) with 25, 50, 75 and 100 per cent replacement of protein mix by SFOC. Enzyme supplementation to the above five experimental diets constituted the remaining five treatment groups (T5, T6, T7, T8 and T9). Feeding was carried out up to sixth week of age and four birds from each replicate comprising of two males and two females were slaughtered at the end of sixth week. New York dressed weight (NYDW), Eviscerated weight (EW), Giblet weight (GW), Ready to cook yield (RCY) and offals weight (OW) were estimated. Mortality was also recorded up to sixth week. The data on percentage values were transformed to arc-sin values before subjecting to analysis of variance. Other data collected were analysed for statistical significance as per Snedcor and Cochran (1989).

RESULTS AND DISCUSSION

The means for live body weight at six weeks of age (Table 2)

Means bearing the same superscript within classes do not differ significantly.

* ($P < 0.05$), ** ($P < 0.01$).

in different treatments showed a highly significant variation ($P < 0.01$) and the effect is not significant for second week body weight measures. It was also observed that quails can perform better up to 50 per cent replacement levels. Enzyme supplementation also showed a highly significant effect on body weight though the second week weight was not influenced. These findings are in accordance with the earlier findings of Isarakal and Tangataweevipat (1990) and Musharaf (1990). However, Rekhate et al. (2010) reported contrary report of non significant effect

The feed efficiency in different treatments and between supplementation showed highly significant variation ($P < 0.01$) at fourth and sixth week body weight measures and was also observed that the maximum feed conversion efficiency was observed at 25 to 50 per cent replacement levels. This is in agreement with Singh and Prasad (1978) where the replacement of groundnut oil cake with sunflower oil cake improved the efficiency of protein and dietary energy utilization. Neither the dietary treatment nor the enzyme supplementation influenced the livability in quails and is in agreement with earlier findings of Ibrahim and Eluzubier (1991). Similarly, neither the dietary treatment nor the enzyme supplementation influenced the carcass traits viz., New York dressed weight (NYDW), Eviscerated weight (EW), Giblet weight (GW) Ready to cook yield (RCY) and offal weight (OW). These results are in favour of Christaki et al. (1994).

REFERENCES

- Christaki Er, Florou Paneri P, Tserveni Gousi AL, Spais AV (1994).** Effect of sunflower seed meal on the performance and carcass characteristics of growing Japanese quails. *Animal Feed Science and Technology* **48** (1) 69-174.
- Ibrahim MA and Eluzubier EA (1991).** Higher fibre sunflower feed meal in broiler chick diets. *Animal Feed Science and Technology* **33** (3-4) 343-347.
- Isarakal BC and Tangataweevipat S (1990).** Effect of different levels of sunflower seed in broiler rations. *Poultry Science* **70** (11) 2284-2294.
- Musharaf NA (1990).** Effect of graded levels of sunflower seed meal in broiler diets. *Animal Feed Science and Technology* **33** (1-2) 129-137.
- NRC (1977).** Number 1 Nutrient Requirements of Poultry 8th edition, *National Academy of Sciences Washington DC* 43-46.
- Rekhate DH, VM Patil, Leena Mangle N and Deshmukh BS (2010).** Effect of sunflower cake inclusion on certain blood biochemicals of Japanese quails. *Veterinary World* **3**(6) 289-290.
- Singh, KS and Prasad CM (1978).** Effect of replacement of dietary groundnut cake with sunflower cake on performance of crossbred starter chicks. *Indian Journal of Poultry Science* **10** (2) 185.
- Snedecor SW and Cochran WG (1989).** Statistical methods. Eight edition, *Iowa state university Press, USA*.