EFFECT OF SHEANUT (*VITELLARIA PARADOXA*) EXTRACT ON THE PERFORMANCE OF LAYERS

T. Rami Reddy, P. Sudhakara Reddy and P.V.V. Satyanarayana Reddy
Department of Poultry Science
College of Veterinary Science
Tirupati-517 502 (A.P.)

Key words: Sheanut Extract, Economic traits, diets.

The cost of Poultry feed ingredients is on an upward trend year after year due to ever increasing demand and reduced supply because of increased competition from other livestock species.In an efford to alleviate this problem several unconventional feed ingredients have been incorporated in Poultry diets. As the proximate composition of Sheanut extract is almost similar to that of Deoiled rice bran, the present study was under taken to determine the optimum inclusion level of Sheanut extract in diets by replacing the Deoiled rice bran to reduce the feed cost.

The experiment was conducted with one hundred eighty commercial Babcock White Leghorn layers of the same hatch. The experiment was started when the birds attained 50% egg production and carried out for 4X28 days periods. The layers were leg banded, weighed individually and randomly divided into 15 replicates of 12 layers each and housed in cages. Three replicates were randomly allotted to each of the five dietary treatments.

Sheanut extract was procured from Food, fat and fertilizers factory located at Tadepalligudem in West Godavari District of Andhra Pradesh and incorporated at 0,2.5,5.0,7.5 and 10 per cent replacing the D.O.R.B in diets on weight by weight basis. The ingredient and chemical composition of the diets was determined as per A.O.A.C (1990). M.E content of Sheanut extract was determined by the prediction equation (Janssen, 1989) whereas the saponin content was estimated by the method of Yosioka (1974). The amino acid composition of sheanut extract was estimated at Degussa India Pvt. Ltd., Feed additives division, Mumbai. Mortality among the birds was recorded and causes there of were ascertained by detailed autopsy.

At the end of each laying period all the eggs laid for the three consecutive days were collected and weighed. From these eggs, three eggs per replicate were randomly picked up from each day collection for study the albumen index (Heiman and Carver,1936), Yolk Index (Sharp and Powell,1930) and shell thickness (By using screw gauge).

Individual body weights were recorded at the beginning and at the end of experiment. Feed consumption and number of eggs laid by each replicate birds during each period were also recorded. From the data, hen - day Egg production and feed efficiency (Kg feed/dozen eggs) in different treatments were worked out. Data were subjected to two way analysis of variance using completely randomized design (Snedecor and Cochran, 1994) and the treatment means were compared by Dunken's multiple range test (Dunken, 1955)

The Sheanut extract contained Crude Protein, Ether Extract, Crude Fiber, Total ash, Calcium and phosphorus at 14.12, 1.90, 6.70, 10.53, 0.55 and 0.27 per cent on dry matter basis respectively. The estimated Metabolizable energy and saponin content were 2395Kcal/ Kg and 0.31 per cent respectively. Variation in the nutrient composition and M.E. values of Sheanut extract

given by earlier workers (Atuahene *et.al,* 1998; Ewing, 2000) might be due to the difference in processing methods applied to the Sheanut extract used in their experiments.

The inclusion of Sheanut extract in diet had no adverse affect on hen – day egg production, feed intake and feed efficiency upto 10% level. However, the egg production and feed intake were apparently decreased with increased levels of Sheanut extract from 2.5 to 10% (Table 2).This might be due to the effect of anti nutrients (Saponin and Theobromine) present in Sheanut extract. The results in the present investigation were in conformity with the findings of Atuahene *et.al*, (1998).

The egg weight, albumen index, Yolk index and shell thickness were not significantly affected among the diets in the present study (Table 2). The highest relative improvement in economy in favour of 10% Sheanut extract fed layers due to reduction in feed cost without any perceptible change in egg production.

The mortality was low (0-1%) irrespective of the dietary treatments among experimental birds and the mortality was (due to egg bound) not related to the Sheanut extract in the diets.

Taking economic traits i.e. egg production, feed intake and feed efficiency into consideration it may be inferred that Sheanut extract could replace D.O.R.B in diets on weight by weight (w/w) basis without much adverse effect on the performance of layers.

REFERENCES

AOAC 1990 Official Methods of Analysis (14th edition). Association of official analytical chemists, Washington, D.C.

Atuahene C C, Donkoh A and Asante F 1998 value of sheanut extract as a dietary ingredient for Broiler chickens. Animal feed science and technology, 72 : 133 – 142

Duncan, D.B.1955 Multiple range and multiple F tests. Biometrics, 11: 1- 42

Ewing W N 2000 The feeds directory.22 – 91

Heiman V and Carver J S 1936 The albumen index as a physical measurement of observed egg Quality. Poultry Science , 15: 141 – 146

Janssen WMMA 1989 European table of energy values for poultry feed stuffs, third edition. Beekbergen, Netherlands; spelderholt center for poultry research and information services.

Sharp P F and Powell C K 1930 Decrease in internal quality of hens egg during storage was indicated by the yolk. Ind. Eng. Chen, 22:909 – 910

Snedecor G W and Cochran W G 1994 statistical methods (8th ed.) Oxford and IBH Publishing Company, Calcutta.

Yosioka 1974 Estimation of Saponin. Tetrahedron, 30,707.

Table 1

Influence of Sheanut extract on the productive traits and relative economics in layers

Traits	Replacement of D.O.R.B by Sheanut extract (W/W)				
	0	**2.5**	**5.0**	**7.5**	**10.0**
Productive traits ^{NS}					
Hen-day/egg production (%)	94.91± 0.97	94.67 ± 0.97	94.44 ± 1.22	94.38 ± 0.78	91.89 ± 1.60
Feed intake (g/bird/day)	112.40 ± 1.16	112.34 ± 0.85	112.10 ± 1.56	112.03 ± 1.25	109.60±0.09
Feed efficiency (Kg feed/12 eggs)	1.42 ±0.016	1.42 ± 0.012	1.43 ± 0.026	1.43 ± 0.019	1.44 ± 0.023
Economic traits ^{NS}					
Cost /Kg feed (Rs)	7.00	6.92	6.84	6.77	6.69
Feed cost/ 12 eggs (Rs)	9.95	9.85	9.75	9.65	9.60
Income over feed cost / 12 eggs (Rs.)	5.65	5.75	5.85	5.95	6.00

Cost of Sheanut extract Rs.1.00/ Kg, Cost of D.O.R.B Rs. 4.00/Kg NS : Non significant

Table 2

Effect of Sheanut extract on Egg quality traits

Traits	Replacement of D.O.R.B by Sheanut extract (W/W)				
	0	**2.5**	**5.0**	**7.5**	**10.0**
Egg weight (g) ^{NS}	50.10 ± 0.83	50.15 ± 0.83	50.21 ± 0.89	50.17 ± 0.84	50.20 ± 0.82
Albumen Index ^{NS}	0.084 ± 0.003	0.083 ± 0.003	0.082 ± 0.004	0.081 ± 0.002	0.081 ± 0.004
Yolk Index ^{NS}	0.434 ± 0.002	0.435 ± 0.003	0.433 ± 0.004	0.435 ± 0.004	0.434 ± 0.004
Shell thickness (mm) ^{NS}	0.362 ± 0.003	0.358 ± 0.003	0.361 ± 0.004	0.358 ± 0.005	0.364 ± 0.004

NS : Non significant