

Guar Meal in Poultry Feed

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Summary: Processed guar seeds (*Cyamopsis psolaroides* D.C) i.e. guar meal was successfully used for egg-laying poultry feed. A significant difference in body and eggs weight was observed when egg-laying poultry was fed with PCSIR formula III feed as compare to PCSIR formulae I, II and standard market feed.

Introduction

Today, poultry farming is a highly technical business. Due to a tough competition the profit margin is becoming less day by day. Correct formulation of feed is extremely important in good poultry keeping. There is much to be said for purchasing proprietary feeding stuffs of excellent quality from firms of reputation. Purchasing ready-made feed can save much time and worry. Because unskilled labor may omit essential ingredients, therefore, extra ease to be exercised to maintain balanced diet. Nutrients are required to maintain a healthy body condition, to produce maximum production of eggs. Growth can only take place when the ration provides nutrients sufficient for the bird's maintenance requirement. Foodstuffs are mainly made up of proteins, carbohydrates, fats and oils, water, minerals and vitamins [1].

Guar (*Cyamopsis psolaroides* D. C) is an annual plant of the Leguminosae family, native to Pakistan and India, and is grown on more than 100,000 acres in the USA, mainly West Texas and Oklahoma [2]. It is an excellent soil improvement crop, but is produced mainly for the seeds or beans which are enclosed in pods until harvested by combine threshers. The seeds contain mannogalactan gum, which is extracted and widely used in paper manufacture, and color printing on fabrics. The residual mass leftover after extraction of gum is an excellent high protein meal [3]. The guar seeds

contain about 50% protein, which is sold as guar meal, a high protein content and PCSIR has used it successfully in poultry feed formulation/ production.

In 1978, a preliminary study was accomplished by replacing expensive peanut cake with toasted guar meal up to 75% in poultry feed. The results revealed no significant difference in weight gain. The experimental results showed that the toasted guar meal is also rich with proteins [4].

Guar gum is recommended for the treatment of diabetes and guar roots have ability to reduce cholesterol, triglycerides and low density lipoprotein level. It also binds toxic substances and acts as a carrier to drain them out of the body. Guar gum is a highly purified natural polysaccharide, its polymeric structure comprises a mannose chain with galactose branches i.e. mannogalactan. The mannogalactan is a cold water soluble hydrocolloid with many unique properties. It can be used as stabilizer, thickener and binder, dispersant, viscosifier, suspending agent, water-blocker, gelling agent and flocculent [5].

Results and Discussions

Public antipathy to intensive battery farming methods of producing eggs has given encouragement over the past ten years to free-range and barn or aviary/perchery production, where birds are housed on the floor instead of in cages. In aviary/perchery

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systems, platforms or percherics increase the useable floor area and enable the farmer to keep more birds for production. Guar meal as a basic constituent with addition to other minerals and fats gave appreciable results for egg-laying poultry. When hens were fed with PCSIR III formula, they gained considerable weight, and the size of eggs was also increased as compared to other group of feeds available in the market. A comparative study of body and eggs weights made it clear that there was prominent difference between commercial feed purchased from the market and PCSIR III feed (see Table 3).

The analysis of different groups of feed showed that PCSIR-III formula contains higher %age of carbohydrates, which is most probably the cause of increased body weight. It is also inferred that the millet is not playing any significant role in the poultry feed for gaining either weight or increase of eggs size (see Tables 1, 2).

Experimental

All PCSIR samples (PCSIR I-III) contained the guar meal in various proportions. It was observed that PCSIR formula III is a very powerful formula for egg-laying poultry. A total number of 32 (8 males & 24 females) birds of 4 weeks were divided into four groups. Each experimental batch was fed with following four kinds feed:

1. Standard feed (feed from open market)
2. PCSIR I
3. PCSIR II
4. PCSIR III

Table 1. % Composition of nutrients in poultry feed

Ingredient	Feed samples			
	PCSIR - I	PCSIR - II	PCSIR - III	Standard feed
Carbohydrates	54	50	69	50
Fats	7	77	72	55
Proteins	19	25	22	20

The details of constituents of each formula are presented in Table 2. Every PCSIR formulation of feed contains guar meal as the main constituent, because guar meal is rich in protein i.e. 50 %.

The birds of four groups were fed with standard feed, PCSIR -I, PCSIR -II, and PCSIR III, respectively. During the experimental work special care was focused on body and egg weight etc.

Table 2. PCSIR formulae for poultry feed

S.#	Contents	PC SIR-I (%age)	PC SIR-II (%age)	PCSIR-III (%age)
1	Mustard meal (cake)	10	10	10
2	Molasses	20	20	25
3	Guar meal	60	65	60
4	Millet	05	-	-
5	CaCO ₃	02	02	02
6	MgCl ₂	02	02	02
7	Ca-lactate	0.5	0.5	0.5
8	NaCl	0.5	0.5	0.5

Table 3. Effect of feeds on the average weight of the poultry and their eggs

S.#	Poultry feed	Initial wt. of poultry (4 weeks old)	Final wt. of poultry (12 weeks old)	Average wt. of eggs
1	Standard feed	700-800 g	900-1000 g	111.5 g
2	PCSIR-I	"	850-900 g	106.3 g
3	PCSIR-II	"	1000-1200 g	112.7 g
4	PCSIR-III	"	1050-1300 g	113.9 g

PCSIR's poultry feed was analyzed for proteins, carbohydrates and fats according to standard AOAC-2000 methods [6-8]. Body weight of four groups as mentioned in Table-3 was noted after eight weeks. The average weight of bird of each group was 111.5 g, 106.3 g, 112.7 g and 113.9 g respectively and there was also considerable increase in egg's size of the group III. The eggs (48) from all groups were weighed, which again supported the effectiveness of PCSIR formula III (see Table 3).

Conclusions

The experiments have thus proved that PCSIR formula III could be safely used, as source of protein and other necessary ingredients required in the poultry feed for egg-laying poultry. The guar meal can be further processed and used in feed of egg-laying poultry, which is economically cheap and feasible.

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References

1. C. E. Fermor, Modern Poultry keeping, The English University Press Ltd.: London, pp. 80 (1965)
2. S. M. H. Jafri, Flora of Karachi, The Book

- Corporation Karachi; Pakistan. pp. 165 (1966).
3. The Wealth of India, A Dictionary of Indian Raw Material and Industrial Products, Government of India Press: India, pp. 407 (1950)
4. T. C. Brahma and S. M. Siddiqui, *Indian Poult. Gaz.* 62(4), 133(1978).
5. D. T. Coxon and J. W. Wells, *Phytochemistry*, 19, 1247 (1980).
6. Official Methods of Analysis of AOAC International; Vol. II, USA, AOAC method 995.13 (2000)
7. Official Methods of Analysis of AOAC International; Vol. 1, USA, AOAC method 954.02 (2000).
8. Official Methods of Analysis of AOAC International; Vol. 1, USA, AOAC method 968.06 (2000).