

Response of Broilers to Dietary Inclusion of Phytogenic Feed during High Rain Fall Season of Konkan Region of India

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Abstract

This study was designed to evaluate the response of broilers to dietary inclusion of phytogenic feed during high rain fall season of Konkan region of India. In this study, A one hundred sixty two unsexed day-old broiler chicks of were enrolled and randomly divided into nine groups with three replications of 18 chicks each. The data were analyzed using Factorial Randomized Block Design. In order to evaluate seasonal impact of research was conducted in summer (S₁), rainy (S₂) and winter season (S₃). The chicks were fed with standard starter and finisher 0 to three weeks and from 4 to 6 weeks of age, respectively during experiment. The control group (T₀) fed on basal diet without any supplementation and other eight treatments groups were supplemented with 0.1 per cent FSP (T₁), 0.2 per cent FSP (T₂), 0.1 per cent GSP (T₃), 0.2 per cent GSP (T₄), 0.1 per cent FSP and 0.1 per cent GSP (T₅), 0.1 per cent FSP and 0.2 per cent GSP (T₆), 0.2 per cent FSP and 0.1 per cent GSP (T₇) and 0.2 per cent FSP and 0.2 per cent GSP (T₈), respectively. The chicks were reared under uniform manage mental condition during three seasons. The study concluded that supplementation of fenugreek seed and guduchi stem powder in broiler diet at 0.2 per cent level showed economically beneficial in rainy season of Konkan region.

Keywords: Phytogenic Feed; Broilers; Cost; High Rain Fall Season

Introduction

Poultry meat is an excellent source of high quality protein, vitamins and minerals for human nutrition. India ranks 5th in broiler meat production and contributes nearly 2.53 per cent world's chicken meat production [1]. The magnificent expansion of industry is also due to the fact that it provides the main source of animal protein through meat and eggs at cheaper rate as compared to other sources of animal protein, low maintenance cost and minimum space requirements, broilers adapt easily to almost any condition and profits are quite high. In a developing country like India,

poultry plays an important role in improving nutritional status of masses, which are mostly suffering from malnutrition due to inadequate and inferior quality protein in their diet and augmenting the income of weaker sections. The poultry industry has now emerged as a highly structured and market-oriented enterprise. Thus the major objective of poultry farming is to increase the profit margin in poultry business by improving feed efficiency and growth rate.

Attempts to use the natural resources such as medicinal plants could be widely accepted as feed additives to improve the efficiency of feed utilization and productive performance in poultry. Antibi-

otic have a certain period as a pulling out time. If the antibiotics are not reserved from the broiler diet before catching the birds for slaughter, it will lead to a problem, like deposition of antibiotic residues in commercial broiler meats and also delivered the antibiotic residues to the consumers through this meat consumption. Ever increasing feed cost and consumer concern about chemical feed additives forced poultry farmers to look for newer and safer feed additives, which could improve feed efficiency, product quality and concurrently should not leave chemical residue in the product. On the other hand, antibiotics as growth promoter in poultry feed are posing serious health risks in humans, because of their residual effect in poultry meat and eggs. Various herbs that are commonly known for their beneficial effects as regular ingredient of human food have also been evaluated as feed additives in poultry feed [2].

Several methods have been suggested to maintain the quality of broiler meat through alleviation of negative effects of extreme environmental conditions. The fenugreek (*Trigonella foenum-graecum* L.) is a well known medicinal plant anabolic, hypolipidemic, anti-stressor and antioxidant phyto-herb having homeostatic role in body of broilers. The alkaloid diosgenin are most responsible for most of its biological properties [3]. The adverse effect of weather on growth performance of broilers are overcome by using another medicinal plant guduchi possess anti-stress, adaptogenic, immunomodulatory and performance enhancing properties [4]. Konkan region of Maharashtra is a narrow belt of 720 km long with a width of 50-60 km between the Arabian Sea on the western side and Sahyadri ranges on the east and Gujarat in the North and Goa state in South. Total geographical area of Konkan is 29.79 lakh hectares.

The climate of Konkan is warm and humid except for a very short period of mild cold climate from December to February. The mean maximum temperature ranges from 25 to 35°C and the minimum between 17 to 27°C with relative humidity of 80 per cent. The average annual rainfall in the region is 3000 to 3500 mm, mostly received from June to September. During the rainy season, the humidity is as high as 90 to 98 per cent. According these environmental conditions of this region it is very challenging for the scientist to develop the feed technology alternative for antibiotics using natural herbal plants available in local areas should suitable for broiler during rainy season. Keeping in mind anti-stress and growth enhancing properties of locally available fenugreek seed powder and guduchi stem powder incorporated in broiler diets at different levels during high rainfall season in Konkan region.

Material and Methods

Experimental birds and diets

One hundred sixty two unsexed broiler chicks, randomly distributed into nine treatment groups of 18 chicks in each T₀ to T₈ groups. The chicks were fed with standard starter feed up to three weeks of age. Chicks fed with broiler finisher from 4 to 6 weeks of age. Group T₀ fed with standard broiler diet. Group T₁ to T₈ supplemented with 0.1 per cent fenugreeks powder (T₁), 0.2 per cent fenugreek seed powder (T₂), 0.1 per cent guduchi stem powder (T₃), 0.2 per cent guduchi stem powder (T₄), 0.1 per cent fenugreek seed Powder and 0.1 per cent guduchi stem powder (T₅), 0.1 per cent fenugreek seed powder and 0.2 per cent guduchi stem powder (T₆), 0.2 per cent fenugreek seed powder and 0.1 per cent guduchi stem powder (T₇) and 0.2 per cent fenugreek seed powder and 0.2 per cent guduchi stem powder (T₈), respectively.

General broiler birds' husbandry practices

The experimental birds were reared in separate compartment in deep litter system. Each compartment had access to one automatic drinker and feeder fixed. The experimental diets were provided to the birds' *ad libitum* throughout the experimental period and record was maintained. The recommended standard broiler bird's vaccination schedule was followed.

Cost of production

The cost of broiler was calculated by using inputs *viz.*, cost of day old chicks, feed and herbal additives. The prevailing market rates of feed and herbal additives were considered for this purpose. Cost of production was calculated per kg live body weight of broiler by using formulae as per Narhari and Rajni [5].

Results and Discussion

The cost of broiler production is given in table 1. The data from the table revealed that higher feed cost was observed in control group than other dietary treatment groups due to higher feed consumption and lower feed conversion ratio of broiler birds in rainy season. The cost of production per kg live weight of broiler bird was maximum for T₄ (Rs.125.24), followed by control T₀ (Rs.125.04), T₇ (Rs.125.00), T₁ (Rs.124.21), T₅ (Rs.124.08), T₆ (Rs.123.38), T₈ (Rs.122.86), T₂ (Rs.122.83), and T₅ (Rs.122.26). The data depicted that net profit per kg live weight of broiler (Rs.32.58/bird) was higher in T₈ (0.2 per cent fenugreek seed and guduchi stem powder of basal diet) and lower in T₀ (Rs.21.04/bird). The finding proved

that local available herbal additives supplemented groups of broiler chickens has more net profit than the control group. The data given in table 1 showed that the net profit was more in 0.2 per cent fenugreek seed and guduchi stem powder supplemented group (T₈) this might be due to the antibacterial, antistress, antioxidant, performance enhancing properties of fenugreek and guduchi stem powder acts as an appetizer during high humidity in rainy season it improves feed conversion ratio. The findings of the experiment are in agreement with findings noticed Abaza [6] who reported that dietary addition Liv-52 (*Tinospora cordifolia* constituent) and fenu-

greek in broiler diet showed better economical returns from broiler production. These results agree with finding of [7] who reported that the inclusion level of herbal feed additive in broiler diets recorded the least cost/kg gain and highest per cent of economic efficiency compared with that of the un-supplemented diets under semi-arid climatic conditions. The findings are in agreement with the findings reported by Kassu, *et al.* [8]. They reported that black cumin, fenugreek and turmeric seeds supplementation in broilers recorded higher profit than un-supplemented group.

Sr. No.	Cost of production of broiler	Costs/kg (Rs)	T ₀	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
1.	Expenditure										
	1. Chick cost(A)= 1.05 x cost of day-old chick (Rs)	30.00	31.50	31.50	31.50	31.50	31.50	31.50	31.50	31.50	31.50
	2. Feed cost (B)=Live weight in kg x FCR x Feed cost/kg (Rs)	28.00	80.14	79.15	77.67	78.06	77.91	76.20	75.99	78.39	75.33
	A+B		111.64	110.65	109.17	109.56	109.41	107.70	107.49	109.89	106.83
	3. Miscellaneous Expenditure (C)=Add 12 % (A+B) (Rs)		13.40	13.28	13.10	13.15	13.13	12.92	12.90	13.19	12.82
	4. Additional cost of feed additive										
	a. Fenugreek seed powder cost/kg (Rs)	95.00	0.00	0.29	0.56	0.00	0.00	0.29	0.29	0.57	0.56
	b. Guduchi stem powder cost/kg (Rs)	450.00	0.00	0.00	0.00	1.37	2.7	1.35	2.70	1.35	2.65
	5. Total cost of feed additives (D) (Rs)		0.00	0.29	0.56	1.37	2.70	1.64	2.99	1.92	3.21
	6. Production cost per kg live weight of broiler (A+B+C+D) (Rs)		125.04	124.21	122.83	124.08	125.24	122.26	123.38	125.00	122.86
2.	Returns										
	1. Sale of one live broiler bird @ Rs.100/kg		158.34	169.03	172.98	171.36	172.68	173.11	170.13	178.34	182.24
3.	Gross returns per broiler (Rs)		33.31	44.82	50.14	47.29	47.44	50.84	46.75	53.34	59.37
4.	Net profit per kg live weight of broiler bird (Rs)		21.04	26.51	28.99	27.59	27.47	29.37	27.48	29.91	32.58

Table 1: Cost of broiler production in different dietary groups in high rain fall season of Konkan region.

Conclusion

It was concluded that dietary inclusion of fenugreek seed powder and guduchi stem powder in broiler diet alone and its combination at 0.1 and 0.2 per cent level may be recommended for economical broiler production during high rainfall season of Konkan region of India. However, 0.2 per cent level of fenugreek seed powder and guduchi stem powder could be more economical. It could be help to minimize the stress of broiler birds due to high humidity during rainy season.

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Competing Interests

The authors declare that they have no competing interests.

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