

# Impact of Herbal Antioxidant Supplementation on Growth Performance of Broiler

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## Abstract

The present experiment was conducted on a study the effect of herbal antioxidant supplementation Satawari on the performance of broiler chicks. The experiment was conducted at University poultry farm. Day old chicks were selected from university hatchery and divided into 3 groups G<sub>1</sub>, G<sub>2</sub>, and G<sub>3</sub> each group was 15 chicks. The chicks of group first were served as control group, while G<sub>2</sub>, G<sub>3</sub> were control received herbal antioxidant supplementation and combination of herbal antioxidant supplementation of Satawari. The effect of the treatment on the performance of broiler chicks was studied up to 6 week of age. Following parameters were observed and the data were statistically analyzed. From present investigation, it was concluded that Application of herbal antioxidant supplementation Satawari in the diet of broiler chicks improved the growth rate but did not show any effect of consumption. It was also concluded that the herbal antioxidant supplementation benefit for day old chick's. Satawari (2%) were found is best as compared to Satawari (1%).

**Keywords:** Broiler, feed consumption, feed conversion efficiency, growth rate and satawari.

Poultry sector is dubbed as the one having highest employability per unit of investment. The Indian poultry sector with 7.3% growth in poultry population has witnessed one of the fastest annual growths of about 6% of eggs and 10% in meat production over the last decade amongst all animal based sectors. The high growth has placed India at 3<sup>rd</sup> position after china and USA, China, Brazil and Mexico with a production of 2.6 mmt of chicken meat during 2009-10 despite such progress the average per capita availability is still nearly 52 eggs and 2.3 kg of poultry meat against in recommended level of 180 egg and 11 kg meat per annum. The average age individual is aware of the need to take quality protein like meat, milk, egg etc. to maintain his optimum health. In

the ancient age, the sole food of human beings was also only the meat. After wards, they learned the use of plants and with the progressive civilization the agriculture become most important tool to provided food. With the advancement in science and knowledge of people .the animal sector in our country has gained momentum. Satawari consist of tuberous roots of asparagus racemosus. It is rich in saponin glycosides. Satawari a galactogogue and a powerful nutritive tonic and rejuvenative which can be given to a person with any type constitution sex age. "Satawari" is an herbal plant known as the "queen of herbals" in ayurveda having properties like nutritive tonic antstress 1- the root powder of asparagus racemosus (AR) is used in a herbal feed

additive which augments the appetite and stimulates the liver function the tuberous root of Satawari are well known for its galactagogue and anabolic activity (2,3) and it appears in many Ayurvedic preparations as growth promoters and immune stimulants. Hemoglobin (HB) and packed cell volume (PCV) concentration increased in the treatment group supplemented with 1% Satawari root powder as compared to control the group of broiler chicken.

The main objectives of this study were to study the effect of Satawari on performance of commercial broiler chicks; to find out the optimum levels of Satawari in commercial broiler chicks; to determine the weekly body weight gain of broiler chicks and to determine the mortality rate.

## Materials and Methods

The experiment was carried out at the poultry farm of Chandra Shekhar Azad University of Agriculture and Technology, Kanpur during the year 2015 for 6 weeks (42 Days) period. The selected 45 chicks were weighed individually and divided randomly into four groups and 15 chicks in each group  $G_1$ ,  $G_2$ , and  $G_3$ . The  $G_1$  group was served as control group, while  $G_2$  and  $G_3$ , respectively used as treatment groups and provided Satawari 1% and Satawari 2% as feed supplement respectively.

## Results and Discussion

### Weekly body weight of different groups

The growth rate of all groups of chicks was measured at weekly interval in table 1. The mean body weights during different periods in different groups were 39.46, 39.60 and 39.66 gm/chick in day old chicks, 78.33, 78.00 and 81.73 gm/chick in first week, 212.40, 214.46 and 223.73 gm/chick in second week, 415.93, 421.86 and 439.40 gm/chick in third week, 726.06, 730.33 and 801.73 gm/chick in fourth week, 930.46, 1029.26 and 1031.13 gm/chick in fifth week, 1132.33, 1229.26 and 1255.00 gm/chick in sixth week in  $G_1$ ,  $G_2$ , and  $G_3$ , respectively (Table 1). The body weight of chicks among different groups was statistically ( $P < 0.05$ ) different and body weight of  $G_3$  group was highest followed by  $G_2$ ,  $G_1$  respectively. These findings are in agreement with Singh (2009); Kanduri (2011); Sapkota (2001) and Shiv Kumar (2005).

**Table 1: Body weight (gm) of broiler chicks under different groups**

Week	$G_1$	$G_2$	$G_3$
0	39.46	39.60	39.66
1	78.33	78.00	81.73
2	212.40	214.46	223.73
3	415.93	421.86	439.40
4	726.06	730.33	801.73
5	930.46	1029.26	1031.13
6	1132.33	1229.21	1255.00

### Weekly body weight gain of different groups

The body weight gain of all groups of chicks was measured at weekly interval (Table 2). The mean value of weight gain was 1092.86, 1187.00 and 1215.33 gm/chick in  $G_1$ ,  $G_2$ , and  $G_3$ , respectively. It showed significant difference among different groups ( $p < 0.05$ ). The weight gain was highest in  $G_3$  followed by  $G_2$  and  $G_1$ , whereas  $G_3$  was significantly higher than  $G_2$  and  $G_1$  and  $G_2$  was significantly higher than  $G_1$ .

**Table 2: Feed consumption in per broiler chicks of different group and age**

Week	$G_1$ (gms)	$G_2$ (gms)	$G_3$ (gms)
1	244.33	245.33	246.00
2	315.06	316.53	317.33
3	419.20	420.66	421.68
4	524.66	526.00	528.33
5	666.06	668.20	670.33
6	840.13	843.20	845.33
Total feed consumption	3011.66	3018.73	3029.13
FCR	2.75	2.53	2.47

### Feed consumption

The mean value for feed consumption during different periods in different groups were 244.33, 245.33 and 246.00 gm/chick in first week, 315.06, 316.53 and 317.33 gm/chick in second week, 419.20,

420.66 and 421.68 gm/chick in third week, 524.66, 526.00 and 528.33 gm/chick in fourth week, 666.06, 668.20 and 670.33 gm/chick in fifth week, and 840.13, 843.20 and 845.33 gm/chick in sixth week in  $G_1$ ,  $G_2$ , and  $G_3$ , respectively. The total feed consumption during this experiment was found slightly differed among all groups. However, in groups  $G_3$  growth was slightly higher followed by group  $G_2$ , and  $G_1$ , respectively. The non-significant differences were found in feed consumption among different groups ( $P>0.05$ ). The results are in agreement with Mahanta (2005); Sharma (2003); Rodelas (2011) and Vidyarthi (2010).

### Feed Conversion Ratio

The mean values of FCR were 2.75, 2.53 and 2.47 gm/chick in  $G_1$ ,  $G_2$  and  $G_3$ , respectively. The FCR was highest in  $G_1$  followed by  $G_2$  and  $G_3$ , where as  $G_2$  was significantly higher from  $G_3$ . In the present study the better performance observed in FCR in treatments groups as compared to control group. Cortisca (1996) reported that the performance of broilers in terms of feed efficiency was better with use

of Hibiscus *sabdariffa* seed. Tomar (1995) also found similar results in terms of feed consumption and feed conversion efficiency. Agarwal (2006) observed the effect of dielgry supplementation of herbal E on performance of broiler chicks. Miles (1996) reported that the FCR was the best for chickens fed on diet.

### Economics of Broiler Production

The total expenditure includes the cost of day old broiler chick electricity charges, labor charges and the total feed required to produce live weight gain of the broiler. The cost of different experimental diets (Starter and Finisher) as shown in Table 3 has been calculated on the basis of the current prices of the feed ingredients. The data revealed that average net profit/bird was 15.00, 19.00, and 24.00 (₹) in  $G_1$ ,  $G_2$ , and  $G_3$ , respectively. Cost benefit ratio was found as 1.14 ( $G_1$ ), 1.15 ( $G_2$ ), and 1.16 ( $G_3$ ). Thus, it can be concluded that the Satawari (2%) as feed supplement is the better ration for broilers. The profit and cost benefit ratio increase with the application of herbal growth promoter in diet.

**Table 3: benefit cost ratio in broiler chicks**

Particulars	$G_1$ (Control)	$G_2$ (Satawari1%)	$G_3$ (Satawari2%)
Cost/Bird (₹)	30.00	30.00	30.00
Feed cost per bird (₹)	64.00	65.00	65.00
Herbal lever (₹)	-	20.00	40.00
Labour cost/bird (₹)	6.00	6.00	6.00
Miscellaneous (₹)	2.00	2.00	2.00
Total Cost of Productions (₹)	102.00	123.00	143.00
Sale/bird (₹)	115.00	140.00	165.00
Sale of other (₹)	2.00	2.00	2.00
Net Income (₹)	117.00	142.00	167.0
Net Profit/bird (₹)	15.00	19.00	24.00
Benefit cost ratio	1.14	1.15	1.16

### Conclusion

The application of herbal antioxidant supplementation (Satawari) in the diet of broiler chicks improved the growth rate but did not show any effect on feed consumption. The herbal

antioxidant supplementation (Satawari) proved to be beneficial for day old chicks and Satawari (2%) were better as compared to Satawari (1%). The net profit per bird is also highest adding Satawari in diet/ration.

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