# Comparative Study of Ashwagandha and Commercial Synthetic Compound on Performance of Broilers during Hot Weather

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**Abstract**

The trial was conducted for a period of six weeks on 225 day old broiler chicks, uniformly distributed into four groups of 75 chicks in each T1, T2 and T3 group. The chicks were fed with standard starter mash which contained crude protein 22.84% and metabolizable energy 2852.5 Kcal / kg (calculated value) up to three weeks of age. For next 3 weeks i.e. from 4 to 6 weeks of age with finisher mash which contained crude protein 20% and metabolizable energy 2966 Kcal / kg (calculated value). Group T1 received standard broiler diet. Group T2 and T3 received standard broiler diet supplemented with Ashwagandha and commercial synthetic compound @ 0.05 % of feed respectively. The experimental birds were reared on deep litter system and rice husk was used as litter material.The supplementation of Aswagandha and commercial synthetic compound recorded significant improvement in all studied growth parameter i.e. live body weights, weekly gain in body weights and feed conversion ratio was observed in all the supplemented groups over the control group. However, feed consumption in control group was significantly higher than supplemented group. The economic returns of supplemented groups are more than the unsupplemented group. The net profit per bird was maximum in the commercial synthetic compound supplemented group followed by Ashwagandha supplemented group and lowest was recorded in control group (T1).

**Keywords**: Broiler chicks, Ashwagandha, Performance, Hot Weather,

## Introduction

Indian poultry industry has made a tremendous and remarkable progress evolving from a small scale backyard venture to the status of commercial, full-fledged, self sufficient and most progressive agro based industry. Indian poultry industry ranks 4th in egg production and 5th in broiler production with contribution of 2% to GDP (Gross Domestic Product) and provides employment to 1.5 million people (Ravikumar, 2007). Though Indian poultry industry recorded faster growth; it is witnessing a series of problems due to high ambient temperature in the tropics, accompanied by high relative humidity is one of the most important stressor. The adverse effects of hot weather on the growth performance of broilers are overcome by using Ayurvedic formulation containing herbs (*Withania somnifera*, *Magnifera indica, Ocimum sanctum etc.*) and fortifying with synthetic amino acids and vitamins. It is proved that these Ashwagandha (*Withania somnifera*) possess antistress, adaptogenic, immunomodulatory and performance enhancing properties. Vitamin supplementation is also a good alternative for reducing heat stress. Additional allowances of vitamins A, E, and D3 and thiamine can improve birds performance at higher temperatures.

Keeping in mind antistress and growth enhancing property of Ashwagandha (*Withania somnifera*) (Archana and Namasivayam, 1999; Deshmukh, 1998) and commercial synthetic preparation procured from market containing vitamin and essential amino acid combination, the present study is undertaken to investigate the following objectives.

## Material and Methods

The trial was conducted for a period of six weeks on 225 day old broiler chicks, uniformly distributed into four groups of 75 chicks in each T1, T2 and T3 group. The chicks were fed with standard starter mash which contained crude protein 22.84% and metabo-lizable energy 2852.5 Kcal/kg (calculated value) up to three weeks of age. For next 3 weeks i.e. from 4 to 6 weeks of age with finisher mash which contained crude protein 20% and metabolizable energy 2966 Kcal/kg (calculated value). Group T1 received standard broiler diet. Group T2 and T3 received standard broiler diet

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supplemented with Ashwagandha and commercial synthetic compound @ 0.05 % of feed respectively. The experimental birds were reared on deep litter system and rice husk was used as litter material.

All the broiler chicks were immunized against Marek's disease in hatchery; chicks were also vaccinated against Ranikhet disease (Newcastle disease) and Gumboro disease (Infectious Bursal disease) on 7th and 20th day of age respectively. During first five days of brooding period Terramycin - WS powder was added in drinking water @ 2.5 gm/ 4.5 litres as preventive medication against Coliform bacterial infections. "Vimeral" (Vit-A, D3, E, B12) was also added in drinking water @ 4 ml/ 4.5 liter during first five days.

Body weight of the individual experimental chicks were recorded in gram on electronic balance at day old and there after at weekly interval till six weeks of age.

*Ad libitum* feed was offered daily and record was maintained. At the end of every week left over feed was measured to calculate feed consumed during the week.

## Results and Discussion

**Growth performance:** The average means of weekly live body weight, weekly gain in body weight, weekly feed consumption and weekly feed conversion ratio are presented in Table 1. Supplementation of Ashwagandha (T2) and Commercial synthetic compound (T3) resulted in significant ($P<0.05$) increases in average means of body weight and weekly gain in body weight than control (T1). The beneficial effect of Ashwagandha recorded in the present study in respect of growth performance is in agreement with Arunkumar (2000), However, non-significant difference was seen in between the groups supplemented with Ashwagandha and Commercial synthetic compound. Feed conversion ratio for both the supplemented group was significantly improved than the control group. The best FCR was recorded in group T3 followed by group T2 and T1.

**Table-1 : Growth Parameters**

| Sr. No. | Particulars | T1 | T2 | T3 |
|---|---|---|---|---|
| 1. | Weekly live body wt. | 631.436a | 733.647b | 747.529b |
| 2. | Weekly gain in body weights | 234.388a | 284.412b | 290.217b |
| 3. | Weekly feed consumption | 425.292a | 419.896b | 419.13b |
| 4. | Feed conversion | 1.75047a | 1.42196b | 1.39129b |

Significance at 5% level

**Economics:** The results of economics of broiler production are given in Table 2. The present study revealed that net cost of production per bird was maximum for T2 (Rs. 48.48) followed by T3 (Rs. 47.92), and T1 (Rs. 47.34). The net profit per bird for groups T1, T2 and T3 was Rs. 15.01, 26.77 and 28.83 respectively. Both the supplemented groups have more net profit than control group. Among the supplemented groups, commercial synthetic compound group (T3) has more net profit per bird than group supplemented with Ashwagandha. The findings of the present study are in agreement with the findings noticed by following scientists Pedulwar (2004) who had reported higher net profit per bird in broiler supplemented with Ashwagandha. Kennedy *et al.* (1992) reported increased target income by 8.44 percent by addition of Vitamin E.

**Table-2 : Economics of broiler production**

| ***Groups*** | **T1** | **T2** | **T3** |
|---|---|---|---|
| Chick cost Rs. | 13 | 13 | *13* |
| Feed intake (g) | | | |
| a) Starter | 814.75 | 806.256 | *798.52* |
| b) Finisher | 1737 | 1713.12 | *1716.26* |
| c) Total | 2551.75 | 2519.38 | *2514.78* |
| Feed cost Rs./Kg | | | |
| a) Starter | 11.50 | 12.10 | *11.90* |
| b) Finisher | 11.50 | 12.10 | *11.90* |
| Feed cost Rs./bird | | | |
| a) Starter | 9.369 | 9.761 | *9.502* |
| b) Finisher | 19.975 | 20.728 | *20.423* |
| c) Total | 29.344 | 30.489 | *29.925* |
| Expenditure on medicine, Vaccine and miscellaneous | | | |
| Rs./ bird | 5 | 5 | *5* |
| Net cost of production Rs./ bird | 47.344 | 48.489 | *47.925* |
| Live body weight at 6th week (g) | 1450 | 1750 | *1785* |
| Return on sale of birds @ Rs. 43/Kg | 62.35 | 75.25 | *76.75* |
| *Net profit/bird (Rs.)* | *15.01* | *26.77* | *28.83* |

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