Feeding Yacca Extract Diets Influence the Live Body Weight, Carcass Characteristics, Feed and Water Intake in Broiler Chickens


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**Abstract**: Effect of feeding Nutrafito plus on the live body weight, carcass weight, feed and water intakes were assessed in broiler chicks. One hundred twenty chickens were randomly weighed and divided into two groups. Birds in group A was as control group while, in group B, birds were supplemented Nutrafito (Quillaja Saponaria + Yucca Schidigera) in feed. Yucca Schidigera 50 gram was mixed into feed and refusal were weighed and recorded. Body weight (live) of experimental chicken (Figure-1) was significantly higher (2400.67 g/bird) in birds of group B (fed nutrafito plus) followed by group A (control) with average live body weight of (2154.83 g/bird). Broilers in group B (fed nutrafito plus) consumed significantly (P<0.05) greater amount of feed (4202.21 g/bird) than group A (control) with average feed intake of (4023.91 g/birds). The result indicated that broilers in group B drink more volume of water (8404.43 ml/bird) as compared to (8047.33 ml/bird) in broilers of group A. The carcass weight was significantly (P<0.05) higher in group B with average value of (1342.25 g/bird) as compared (1170.83 g/bird) to broilers in group A. The highest dressing percentage were examined in group B (55.94%) followed by group A (54.42%). Overall, the supplementation of nutrafito plus significantly influence on the live body weight, carcass weight, feed and water intake in broiler chicks.

**Keywords**: Yacca Extract, Diet, Broiler, Growth, Nutrafito Plus

1. **INTRODUCTION**

Commercial poultry farming is the most significant source of quality protein of high biological value to meet the required quantity of protein from animal origin through poultry meat in Pakistan. The industry is currently investing Rs. 200.00 billion, contributes 9.8% in Livestock and 4.8% in Agriculture of Pakistan, and employs 1.5 million people (GOP, 2013). However, despite a robust annual growth rate of 8-10%, infectious diseases caused by viruses, bacteria, fungi or parasites in poultry still remain a major impediment causing illness, deaths, low production, and economic losses.

Nutrafito plus is a nutrient obtained from plant species Quillaja saponaria and Yucca Schidigera. Naturally, it contained in higher quantities of polyphenols, triterpenic, steroidal saponins, yuccaols and resveratrol. It is free from any artificial preservative, chemical extract or carrier. In natural conditions, Yucca Schidigera plants are found in the deserts of Baja California. Whereas, Quillaja saponaria is mostly occur in South America especially in deserts of Chile.

Generally, quillaja and yucca extracts are added in soft drinks and cosmetics products. These are also fed to chickens and farm animals to gain high production and to improve the immunity (Kensil et al., 1996). The three major classes of saponins are triterpene, steroid, and steroid alkaloid (Hostettman and Marston, 1995).

Yacca contained higher amounts of polyphenols that combine with hydrogen sulfide and ammonia in the air and thus improve the ventilation system of poultry farms. Quillaja and yucca plants are also rich in saponins. Saponins are found to have been found to regulation of hypocholosteremic actions and reduction of cholesterol level in poultry eggs. The saponins bind to animal cell membrane and alter the structural and functional activities of cell membrane. The binding ability of the saponin with cholesterol is also well known for its anti-parasitic actions (McAllister et al., 2001).

Therefore, quillaja saponin extracts are used in the preparation of nematodal products for crops. Yacca extracts are rich in polyphenolics (Yaccaols and resveratrol) and these have been found to produce anti-inflammatory effects (Marzocco et al., 2004). Yaccaols and resveratrol are active in reduction of cytokine formation and producing positive influence on growth and immune response (Niewold, 2007). Nutrafito Plus is added as feed additive in the formulation of diet for poultry, in order to produce nutrient rich and cost effective feed (Ravindra, 1993).
\[ \text{Feed intake (g/b/d)} = \frac{\text{Total feed offered} - \text{Total feed refused}}{\text{Total broiler} (\#)} \]

\[ \text{Water intake (ml/h/d)} = \frac{\text{Total water offered} (ml) - \text{Total water refused} (ml/group/d)}{\text{Total broiler} (\#)} \]

\[ \text{Feed conversion ratio} = \frac{\text{Total feed intake} x 100}{\text{Total live body weight}} \]

\[ \text{Dressing percentage} = \frac{\text{Total Carcass weight (kg)}}{\text{Total Live body weight (kg)}} x 100 \]

\begin{table}[h]
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\begin{tabular}{|c|c|}
\hline
\textbf{Parameter} & \textbf{Value} \\
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\text{CP (\%)} & 21\% \\
\text{ME (Kcal)} & 2800 \\
\text{Moisture} & 12\% \\
\text{Ash} & 7\% \\
\hline
\end{tabular}
\caption{Feed composition of experimental broiler}
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Before the start and end of the experimental period each bird was weighed using electric weight balance. Also the weights of birds were noted at the end of each week during the entire experimental period.

Body weight (live) gain

Before the start and end of the experimental period each bird was weighed using electric weight balance. Also the weights of birds were noted at the each week during the entire experimental period.

\[ \text{Feed consumption (FCR)} = \frac{\text{Total feed consumption (g/b/d)}}{\text{Total live body weight (g/bird)}} \]

\[ \text{Water intake (ml/h/d)} = \frac{\text{Total water offered} (ml) - \text{Total water refused} (ml/group/d)}{\text{Total broiler} (\#)} \]

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favoring higher growth rate and better feed efficiency. The high body weight gain may be in relation to high absorption of steroid saponins of intestinal mucosa. Previously, it has been shown nutrient absorption in intestinal mucosa due to steroid saponins effects (Wang and Kim, 2011). The current findings supported by Sahoo et al., (2015) recorded the average body weight was significantly (P<0.05) higher in chicken fed yacca extract diet (1995 g) in comparison to control group which lagged behind with the average body weight of 1822 g.

Data on the feed intake of broiler chicken are shown in (Fig.2). Broilers in group B (fed nutrafito plus) consumed significantly (P<0.05) greater amount of feed (4202.21 g/bird) than group A (control) with average feed intake of (4023.91 g/birds). Feed intake indicated numerically higher consumption in Yucca group than control group chicks. The efficiency of utilization of feed was significantly better in Yucca group than control group. Overall data for protein efficiency ratio indicated significant improvement in the efficiency of broiler chicks to convert the protein into body weight gain among the yaaca extract fed group in comparison to control group. During the entire period of experiment, significantly higher protein, energy net feed consumption by the chicks of the treatment group associated with more weight gain thus improved FCR values indicated better efficiency of utilization of feed, protein, and energy in broiler chicks with the Yucca supplementation than control group. Another finding are further supported by (Elliot et al., 1991), they reported the addition of Yucca schidigera to the broiler diet increased numerically the body weight of the broiler compared to control. Another study on chickens and rabbits showed that Yucca schidigera powder has beneficial effect on chickens and farm animals (Walker, 1993).

The performance trait of broiler chicken such as carcass weight is presented in (Fig.4). The results showed that carcass weight was significantly (P<0.05) higher in group B (nutrafito plus) with average value of (1342.25 g/bird) as compared (1170.83 g/bird) to broilers in group A (control). The analysis of variance indicated that carcass weight of broiler chicken differed significantly among the groups (F=669.39; DF=1; P=0.000; CV= 2.89%).
The dressing percentage was calculated in broiler chicken and results depicted in (Fig.5). The highest dressing percentage were examined in group B (55.94%) followed by group A (54.42%). The analysis of variance concluded that dressing percentage of broiler chicken differed non-significantly among the groups (F=11.99; DF=1; P=0.0007; CV= 14.34%). The diets containing yacca extract improve the microbial quality of chicken carcass (Windisch et al., 2014).

CONCLUSIONS

From the present finding it was concluded that all the growth traits of broiler chicken was significantly and linearly increased when nutrafito plus were incorporated in the diet. Furthermore, the overall data on growth revealed that the use of nutrafito plus had a significant effect on growth performance, which might be acting as bio-stimulant and growth promoter in broiler chicks. The supplementation of nutrafito plus significantly influence on the live body weight, carcass weight, feed and water intake.

REFERENCES:


