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Research Article

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Effect of Turmeric Powder Supplemented Feed on Body Weight and Body Measurements in Fattener Weaner Rabbits

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ABSTRACT

Intensive rabbit production systems have gained increasing interest in developing countries. Medicinal properties of Curcuma longa have been attributed primarily to curcuminoids, which are located in the plant rhizome. An attempt has been made to incorporate turmeric powder in the concentrate feed of fattener/ broiler rabbits and assess the morphometric growth rate. The study was conducted for a period of eight weeks in weaned fattener rabbits. It was observed that there was a significant difference in body weight and morphometric changes in the turmeric fed rabbits during the trial period. The body weight significantly increased after four weeks of feeding trial. Hence the study suggested that turmeric could be beneficially added in the feed of rabbits as an efficient growth promoter.

Keywords: *Fattener rabbits, Body measurements, Turmeric powder*

INTRODUCTION

Intensive rabbit production systems have gained increasing interest in developing countries like India. The use of novel ingredients and feed additives in rabbit diets has gained increasing popularity in the past few years. More suitable composition of feed mixture or administration of natural additives at a suitable concentration might be beneficial in livestock farming without negative effect on the environment and the animal as an individual (Foldesiova et al., 2015). There are many herbs with growth promoting essential oils which could be used for the effective body weight gain and growth in livestock. Herbs, spices and botanicals have been shown to offer a wide range of activities, including animal performance and increasing nutrient availability. When compared to antibiotics or inorganic chemicals, they present less toxicity and are free of unwanted residues and also act as growth promoters when used as supplements in animal diets (Castro et al., 2007).

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Curcuma longa, a member of *Zingiberaceae* family commonly known as turmeric, has its origin in tropical and subtropical regions of India and China is valued for its medicinal properties attributed primarily to curcuminoids, which are located in the plant rhizome. Curcumin (diferuloylmethane) is the most important fraction of *Curcuma longa* (Araujo & Leon, 2001). Herbal plants could be considered as a new class of growth promoters, and these feed additives have received closer attention from the feed industry in recent years. Hence an attempt has been made to incorporate turmeric powder in the diet of fattener/ broiler rabbits and assess the morphometric growth rate.

MATERIALS AND METHODS

The study was made from fattener/broiler weaned rabbits maintained at Livestock Farm Complex (LFC), Madhavaram , Chennai. The animals were reared both for fattening as well as for live sale purpose. The fattener rabbits were housed in individual cages with recommended floor space allowance attached with automatic nipple waterer under intensive system. Thirty weaned Soviet Chinchilla fattener rabbits of 350-400g comparable body weights were selected and were divided into two groups namely, T1 and T2. The feeding trial was designed in such a way that each group comprised of fifteen animals of either sex. The T1 comprised of the treatment group in which the fattener bunnies were provided with turmeric powder enriched feed. To one kilogram of rabbit concentrate feed, 10 gms of commercial food grade turmeric powder was added and thoroughly mixed manually. To the control group T2, concentrate feed alone was offered. Feeding was done two times daily at 11 am and 3.30 pm provided with clean and potable water. The room in which rabbits were housed was hygienically maintained. The duration of the feeding trial was eight weeks. Rabbits were weighed every week using a electronic weighing balance and weights were recorded in grams. The data collected were subjected to two independent sample student‘t’ test for statistical analysis using SPSS version 25.0 as per the method of Snedecor and Cochran (1994).

RESULTS AND DISCUSSION

The mean ± S.E of the body weight, body length and chest girth is given in Table 1. By statistical analysis it was found that there is significant difference in body weight between T1 and T2. The average body weight gain in the experimental group (T1) was high when compared to the control group (T2). It was found that the addition of *Curcuma longa* dried powder into rabbit concentrate feed had a positive effect on average weight gain. In this study it was found that the body weight of rabbits started to increase after four weeks of feeding trial. Al-Sultan et al. (2003) illustrated that there was a positive effect of *Curcuma longa* powder when added to the diet of broiler birds. He attributed this weight gain to the diet containing *Curcuma longa* at level of 0.5 % compared to the birds receiving 0.25 % and control birds. The increase in body weight in rabbit in the present study might be due to the presence of Curcumin which possesses a powerful anti- platelet, anti- inflammatory, anti-oxidant, anti- bacterial and anti-viral activity which enhances digestion and absorption of some nutrients in the diets that cause greater efficiency in the utilization of feed, resulting in enhanced growth (Alagawany *et al.*, 2016). Durrani et al. (2006) reported significantly positive effect of curcuma at the level of 0.5 % on weight gain of broiler birds. It was also observed from the trial that there was a significant increase in body measurements of the subject animals starting from the fourth week. This might be due to the increase in body weight and better feed efficiency. Habeeband and Tarabany, (2012) also shown that curcumin added to the diet of kids during the hot summer months significantly improved the final live body weight and average daily body gain of kids compared to the control.

Hence it could be suggested that supplementation of commercially available turmeric powder in the diet of rabbits eventually increases the body weight with better feed efficiency.

Table 1: Mean ± S.E of Body weight and body measurements of Fattener Rabbits at weekly interval

Weeks	Body weight		T value	Body length		T value	Chest girth		T value
	T 1	T 2		T 1	T 2		T 1	T 2	
1.	536 ±0.029	506 ±0.037	0.561^{Ns} (0.16)	25.16 ±0.43	24.26 ±0.46	1.40^{Ns} (0.19)	18.20 ±0.52	17.60 ±0.66	0.70^{Ns} (0.50)
2.	580± 0.04	526 ±0.026	1.53^{Ns} (0.16)	27.32 ±0.89	24.94 ±1.04	1.72^{Ns} (0.12)	22.76 ±1.05	20.48 ±0.79	1.73^{Ns} (0.121
3.	692 ±0.011	623 ±0.036	1.071^{Ns} (0.315)	28.84 ±0.50	25.74± 1.23	1.32^{*} (0.04)	23.42± 1.02	20.70± 0.57	2.31^{*} (0.049)
4.	733± 0.005	700 ±0.009	3.041^{*} (0.016)	27.68 ±0.46	24.84 ±1.22	2.16^{Ns} (0.063)	20.64 ±0.73	19.36± 0.66	1.294^{Ns} (0.231)
5.	780 ±0.006	720± 0.01	3.08^{*} (0.015)	29.74 ±0.51	26.64 ±0.86	3.07^{*} (0.01)	23.14± 1.70	19.32 ±0.33	2.20^{Ns} (0.05)
6.	815± 0.004	768± 0.017	2.61^{*} (0.031)	30.68± 0.85	27.34 ±1.12	2.35^{*} (0.04)	24.52± 1.26	21.28 ±1.22	1.83^{Ns} (0.103)
7.	838± 0.004	783± 0.018	2.94^{*} (0.018)	33.54 ±1.03	29.66± 1.022	2.66^{*} (0.028)	26.10 ±0.79	23.32±0.061	2.174^{Ns} (0.061)
8.	914 ±0.019	850± 0.017	2.43^{*} (0.041)	34.59 ±0.56	31.56 ±1.24	2.20^{Ns} (0.058)	23.32 ±1.002	26.04 ±1.69	0.051 (0.961)

Figures in the parenthesis represented P-value, ** significant (P≤0.01) at 1% level of significance, * significant (P≤0.05) at 5% level of significance, ^{Ns} Not significant (P≥0.05)

CONCLUSION

A study was made to assess the body weight gain and morphometric changes in fattener/ broiler rabbits maintained in LFC, Madhavaram by feeding *Curcuma longa* supplemented concentrate diet. Body weight, body length and chest girth were recorded in fattener bunnies for eight weeks and the results were statistically analysed. There was a significant difference in body weight gain in the *Curcuma longa* treated rabbits. The supplementation of *Curcuma longa* powder to the concentrate feed for rabbits positively affects body weight gains significantly. Therefore for improving growth performance, further studies are required to define an optimal supplementation of *Curcuma longa* in the rabbit diet as a growth promoter.

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