
Vitamin E supplementation of sorghum gluten meal diets fed to broilers.

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Summary

A feeding trial was conducted to study the effect of vitamin E supplementation to **sorghum-sorghum glitten meal based diet on growth of broiler chicks. supplementation of the basal diet with various levels of vitamin E failed to alter significantly weight gain, feed intake, gain: feed ratio or liver, pancreas, bursa and abdominal fat relative weights. Liver chemical composition was not affected by the dietary treatment. Failure to show a response to supplementation of vitamin E suggests the birds were receiving a level of vitamin E adequate to maintain growth.**

Introduction

Vitamin E requirement is usually met when animals consumed feeds high in vitamin E content. If total vitamin E intake is low or consists of non a -tocopheral i.e. isomers with low biopotency then vitamin E deficiency may develop. In the Sudan sorghum which is the staple diet has been shown to contain low vitamin E content with poor isomers (Elzubeir, unpublished). However, no problems of vitamin E deficiency has been reported. Moreover there is no information available on the effect of vitamin E supplementation to sorghum based diets. Thus this experiment was carried out to investigate the

effect of supplementing sorghum-sorghum gluten meal diet with various levels of vitamin E.

Materials and Methods

Day-old unsexed broiler chicks (Lohmann) were obtained from a commercial source. Four replicate pens of 10 chicks each were assigned to each of four dietary treatment for 5 weeks. The birds were kept in a deep litter poultry house. Feed and water were provided ad. libitum. The chicks were group-weighted at weekly interval and feed consumption by each group was determined at the time of weighing.

The experiment was conducted in the premises of poultry unit, Faculty of Animal Production, Sh4mbat, during the period between September to November 1990. The ambient temperature ranged between 19.2 °C to 39.2 °C.

The percentage composition of the basal diet was sorghum 55.5; sorghum gluten meal 33.5; vegetable oil 4; bone meal 3.5; wheat bran 1.8; common salt 0.3; 0.25 minerals and vitamins supplement; 0.2 L-lysine and 0.3 dl-methionine. To this diet increasing levels (15, 30 and 45 mg/kg) of vitamin E (as a dry powder 50% provimi E 50% Se F-Hoffman-La Roche) were added at the expense of different proportions of sorghum. The calculated and determined chemical composition of the experimental diet were given in Table (1). At five weeks old five chicks from each replicate were weighed, slaughtered and liver, pancreas and bursa of fabricus were excised and weighed. Livers were kept in the freezer (- 20 °C) pending analysis. Results were analysed statistically by analysis of variance and regression analysis (Steel and Torrie, 1960).

Table 1: Calculated and Determined Analysis of the Experimental Diets.

Calculated Analysis (%)	
Crude protein	23.4
Metabolizable energy (MJ/kg)	13.38
Calcium	1.03
Phosphorus	0.5
Lysine	1.2
Methionine	0.6
Determined Analysis (%)	
Crude protein	22.98
Ether extract	4.60
Ash	10.85
Dry matter	95

Results and Discussion

Weekly data for weight gain, feed intake and feed conversion ratio showed no significant differences throughout the experimental period. Therefore data are presented on daily basis (Table 2). Supplementation of sorghum-sorghum gluten based diet with various levels of vitamin E has no significant effect on weight gain, feed intake and feed conversion efficiency. This differs from the findings of Nickels *et al.* (1976) who reported a reduction in weight gain in chicks in diets supplemented with vitamin E. This

Table 2: Effect of feeding various levels of vitamin E on body and organ weights of chicks.

	Added vitamin E (mg/kg)	0	15	30	45	SEM	Linear effect (t-value for significance)
ELZUBEIK	Final body weight (g/bird) ¹	764.25	776.50	668.75	695.25	0.757	-2.772
	Weight gain (g/bird/day) ¹	19.41	19.82	16.69	17.54	0.008	0.561
	Feed intake (g/bird/day) ¹	44.83	47.82	42.74	43.70	0.046	-1.228
	Feed conversion ratio	2.31	2.42	2.57	2.49	0.004	0.876
	Liver relative weight ²	3.53	4.24	3.44	3.44	0.006	-1.098
	Pancreas relative weight ²	0.30	0.29	0.31	0.32	0.0006	1.046
	Abdominal fat relative weight ²	2.96	3.18	2.42	2.48	0.007	0.561
	Bursa relative weight ²	0.27	0.26	0.26	6.29	0.007	-0.981

1- Values are means of 40 chicks/treatment ± standard error of treatment mean (SEM).

2- Values are means of 20 chicks/treatment ± standard error of treatment mean (SEM).

None of the means are statistically significant $P > 0.05$.

difference may be attributed to low levels of vitamin E included in the present study. The dietary treatment had no significant effect on liver, pancreas, bursa and abdominal fat relative weights (Table 2). Livers from chicks fed vitamin E supplemented diet had a dark red colour compared to the control. A similar observation was reported by McCuaig and Motzok (1970) and Nockels *et al.* (1976).

Failure to show a response to vitamin E supplementation suggests the birds were receiving a level of vitamin E adequate to maintain growth. Moreover, high dietary levels of vitamin E can be tolerated by^N chicks with no overt signs of toxicity.

Table 3: Effect of vitamin E supplementation on liver chemical composition.

Added vitamin (mg/kg)					SEM	Linear effect (t-value for significance)
	0	15	30	45		
Moisture	29.20	30.00	30.20	29.10	0.0259	1.79
Crude protein	17.80	16.40	18.20	16.40	0.021	0.945
Ether extract	3.40	4.23	3.81	4.03	0.02	0.11

Values are means of 20 chicks/treatment \pm standard error of treatment mean (SEM).

None of the means is statistically significant $P > 0.05$.

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