

EFFECT OF MODE OF VITAMIN E SUPPLEMENTATION ON ADAPTABILITY AND STRESS BIOMARKERS ON UDA RAMS IN SEMI-ARID REGION

Abdulazeez Abdullahi Adeoye, K.M. Aljameel.



Department of Animal Science, Usmanu Danfodiyo University, P.M.B. 2346, Sokoto, Nigeria

INTRODUCTION & AIM

The livestock sector is vital to Nigeria's agriculture and rural economy but remains underproductive, contributing only 1.7% to GDP and 9% to agricultural value added. Sheep production, mainly by smallholders and nomads, provides meat, income, and livelihood security for rural households (Statista, 2022; NRC, 1985).

However, productivity is constrained by nutritional and environmental stressors, which impair growth, immunity, and adaptability (Umar, 2013).

Vitamin E, a natural antioxidant (α -tocopherol), protects body cells from oxidative stress and improves animal health and resistance (Huber, 1988; Golub & Gershwin, 1985).

The study was conducted to assess the effect of vitamin E supplementation on the adaptability and stress biomarkers of Uda rams raised under semi-arid conditions.



METHOD

- The study was conducted at the Livestock Farm, UDUS Sokoto (Sudan Savanna; rainfall $\approx$ 500 mm; temp. 12–41 °C).
- A CRD with 3 treatments and 4 reps:
T₁ – Control, T₂ – 40 g/kg Vit E (feed), T₃ – 40 g/L Vit E (water).
Trial lasted 7 weeks.
- Nine Uda rams (18–23 kg) were quarantined, dewormed, and fed a basal diet (ME 2509 kcal/kg; CP 17%).
- Data: cortisol, prolactin, T₃, T₄, TAC, SOD, GPx, pulse, respiration, rectal temp.
Analysis: ANOVA (LSD, $p < 0.05$).

RESULT & DISCUSSION

Stress Biomarkers and Antioxidant Activity

Tab1: The table below presents the measured parameters and the effects of vitamin E supplementation administered through water and feed in comparison with the control group.

Parameter	Control	Vit E Feed	Vit E Water	Effect
Cortisol (ng/ml)	55.3	45.3	52.7	↓ stress
MDA (nmol/ml)	2.86	1.88	1.89	↓ oxidative stress
Resp. Rate (bpm)	42.7	26.0	31.2	↓ stress
SOD (U/ml)	0.68	0.82	0.78	↑ antioxidant
Rect Temp (°C)	39.6	39.3	39.0	NS

Values are mean plus / standard error values in row significantly different at ($p < 0.05$) Level

Vitamin E supplementation influenced stress and oxidative parameters (Table 1).

Cortisol, T₄, and MDA were significantly reduced ($p < 0.05$) in vitamin E-treated rams compared to control, indicating lower stress and oxidative damage.

Prolactin, T₃, TAC, and SOD showed no significant differences ($p > 0.05$). The reduction in T₄ and MDA suggests vitamin E alleviated stress-related thyroid activity and lipid peroxidation, supporting its antioxidative role (Awadeh et al., 1998; Flohé, 2007).

Adaptability Parameters

Vitamin E reduced respiratory rate significantly ($p < 0.05$) compared to control, indicating improved heat tolerance

CONCLUSION

- Vitamin E—especially through feed—reduced stress markers (cortisol, MDA) and improved antioxidant activity (SOD) in Uda rams.
- Minimal effects were seen on T₃, T₄, and prolactin.
- Feed supplementation enhanced adaptability and stress tolerance better than water.
- Overall, vitamin E supports improved resilience in livestock.

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