

## Efficacy of Oral Administration of a Reliable AD3E Treatment on Vitamin D3 Deficiency in Najdi Sheep

Wessam Monther Mohammed Saleh<sup>1\*</sup>, Alaa Ahmed Ibrahim<sup>2</sup>, Tamadhir Abd Alkadhoom ALhamed<sup>1</sup>, Hassan Nima Habib<sup>3</sup>, Rafid Majeed Naeem<sup>2</sup>, Hayder Kamil Maryoosh Alabada<sup>1,4</sup>, and Abdulhussein Mohammed Abdulrasool<sup>1</sup>

<sup>1</sup>Department of Internal and Preventive Medicine, College of Veterinary Medicine, University of Basrah, Basra, Iraq.

<sup>2</sup>Department of Surgery and Obstetrics, College of Veterinary Medicine, University of Basrah, Basra, Iraq.

<sup>3</sup>Department of Animal Production, College of Agriculture, University of Basrah, Basra, Iraq.

<sup>4</sup>Department of Livestock Services, Al-Diwaniyah Agriculture Directorate, Ministry of Agriculture, Iraq.

\*Correspondence Author Email: [wessamgm@gmail.com](mailto:wessamgm@gmail.com)

### Abstract

This study was aimed to assess the efficacy of oral treatment of commercial product of vitamin D3 (VITOL-80 C ORAL<sup>®</sup>, Interchemie, Holland) in growing Najdi sheep suffering from musculoskeletal illness due to vitamin D3 deficiency in Basra province, Iraq. Using a Najdi sheep model bred in Iraq, here we focused on measuring the serum levels of total vitamin D3, calcium, phosphorus, parathyroid hormone (PTH), alkaline phosphatase (ALP) and alanine aminotransferase (ALT) as well as complete blood count (CBC) and clinical examinations pre and post-treatment with VITOL-80 C ORAL<sup>®</sup>. No significant changes ( $P > 0.05$ ) of the vitamin D status were recorded in Najdi sheep with vitamin D3 deficiency post treatment with (VITOL-80 C ORAL<sup>®</sup>). However, a sharp ( $P < 0.0001$ ) decline of the total serum vitamin D3 concentration were observed in those Najdi sheep per-administration ( $21.95 \pm 1.82$  ng/ml) and post-administration ( $22.29 \pm 1.34$  ng/ml) of vitamins therapy contrast to control healthy Najdi sheep ( $89.75 \pm 6.84$  ng/ml). An interaction between vitamin D3 status and the serum concentrations of calcium/phosphorus, PTH, ALP and ALT was observed. With vitamin D3-deficient Najdi sheep; values of CBC, and calcium/phosphorus concentrations were lower while PTH, ALP and ALT were higher than the healthy control Najdi sheep; thus, no significant changes ( $P > 0.05$ ) of these values were recorded post treatment of (VITOL-80 C ORAL<sup>®</sup>). In conclusion, vitamin D3 deficiency threatens the health of local Najdi sheep and has a potential role through suppressing their immunity. Oral administration of the commercial product as a source of vitamin D3 is not effective suggesting involvement of vitamin D receptors (VDR) and/or dysfunction of liver and kidneys.

