

## PHOTOSENSITIZATION IN SHEEP ASSOCIATED WITH INGESTION OF *TRIBULUS TERRESTRIS* IN AL-NAJAF DESERT

Ali Hussein AL-Dujaily<sup>1</sup>, Shatha Atta Abeed<sup>2</sup> and Abdulameer Abid Hatem<sup>1</sup>

<sup>1</sup>Department of Veterinary Clinical Sciences, Faculty of Veterinary Medicine, University of Kufa, Iraq.

<sup>2</sup>Al-Forat Al-Awsat Technical University 31003, Iraq.

e-mail : alih.aldujaily@uokufa.edu.iq, kin.sht@atu.edu.iq, abdulla.hatem@uokufa.edu.iq

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**ABSTRACT :** This study was conducted to investigate one of the most issues in Iraqi Awassi sheep by ingesting of *Tribulus terrestris* that disseminated in the Al-Najaf Desert. The Iraqi Awassi sheep is one of the most popular and economically important sheep in Iraq and the Middle East which survive on the low nutrition level. Nutrition also remains one of the major constraints to livestock production in the tropics, particularly the lack of protein during the dry season. *Tribulus terrestris* (Qutub) belongs to family Zygophyllaceae, it is a herbaceous, mat forming plant in nature and grows in warm dry tropics all over the world. A total of 75 blood samples were collected from jugular vein and placed into EDTA and plain tubes. Samples were divided into two groups depending on the clinical signs, 45 sheep were clinically healthy and 30 sheep possessed clinical signs that are suggestive of photosensitization in Al-Najaf governorate, Iraq. The results showed that the total blood analyses, there were a significant increase ( $P > 0.05$ ) in total leukocyte count and neutrophils, while, there was no significant difference in total red blood cells, PCV, Hb, lymphocytes and eosinophil of affected sheep compared to the control. Furthermore, affected sheep had significantly higher levels of aspartate aminotransferase (AST), alkaline phosphatase (ALP), sorbitol dehydrogenase (SDH), total protein, total bilirubin, and serum urea nitrogen. In conclusion, the present study recorded that hematological, biochemical and pathological changes related with ingestion of toxic plant *Tribulus terrestris* in Al Najaf desert of Iraq, which causes photosensitization in affected sheep.

**Key words :** Sheep, hematological parameters, biochemical parameters, *Tribulus terrestris*, photosensitization.

### INTRODUCTION

Photosensitization is a condition that makes the skin strangely sensitive to bright sunshine after the herd eat certain toxic plants, which causing skin damage. Many photosensitization diseases in livestock cause animal welfare problems and significant economic losses as a result of weight loss, udder lesions and secondary infections, particularly when it occurs in groups of animals. It is defined as hypersensitivity reaction of non-pigmented and short-haired regions due to photodynamic agents that found in it. It causes great economic losses (Pollock *et al*, 2015a). Furthermore, photosensitization is currently classified depending on the source of the photodynamic agent to type I photosensitivity (primary), type II (hepatogenous) photosensitivity and type III photosensitivity, (aberrant endogenous pigment synthesis) (Hussain *et al*, 2018). Liver is damaged by toxins, infectious agents or neoplasms, which lead to Hepatogenous photosensitization, so that phylloerythrin cannot be sufficiently excreted by the liver. Subsequently, the photodynamic agent phylloerythrin levels increase in

the blood and then accumulate in the skin (Quinn *et al*, 2014). *Tribulus terrestris* (commonly known as puncture vine, caltrop, and called "Qutub" in Arabic) is a drought-tolerant, summer growing annual herb with prostrate hairy structure belong to the family of Zygophyllaceae (Al-Bayati, 2008; Shishovska, 2015). It is widely distributed in tropics and subtropics regions all over the world (Tahseen and Mishra, 2013; Chhatre *et al*, 2014), as well as, the *Tribulus* is common distributed in forest zone of Iraq (Sulaimaniya, Mousil, Rutba and Habbaniya) and the desert of Al-Najaf (Evans, 2009; Qasem, 2014). Under certain circumstances, grazing on *Tribulus terrestris* causes a hepatogenous photosensitization in sheep and goats known as Geeldikkop, yellow big head, or Tribulosis ovis (Aslani *et al*, 2004). Because of steroidal saponin content of *Tribulus terrestris* it lead to hepatotoxicity, causes an outbreak of sporadic hepatogenous photosensitization in small ruminants (Ocal *et al*, 2013b). Therefore, a photosensitization case should be properly diagnosed whether or not the case is by measuring the levels of bilirubin, liver enzymes and bile acids (Ocal, 2013).