

## EFFECT OF NATURAL SHADING ON SOME ADAPTIVE TRAITS OF HYDRATED AND DEHYDRATED EWES DURING BREEDING UNDER SEMI-ARID CONDITIONS

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### SUMMARY

This study aimed at testing the relief effects of trees shadow, as a low cost accommodation, on both hydrated and dehydrated ewes during breeding in the hot months of summer. Fifty two crossbred Barki X Merino ewes; raised in western coastal desert of Egypt; were divided into two groups, one kept under trees and the other exposed to sun. Each group was divided into two sub-groups, one of them was intermittently watered every 4 days and the other watered daily. The adaptive responses of ewes, in terms of changes in some hematological parameters and body fluids, were examined for 2.5 months, where ewes were in early embryonic stage.

Exposure to sun, though led to a degree of blood dilution, ewes could keep blood hemoglobin by increasing its concentration within the cells, as an adaptive mechanism to get the optimum needs of oxygen under heat stress. Also, sun-exposed ewes increased the albumin/globulin ratio to restore their blood volume by keeping its osmolarity, which helps in evaporative cooling of body temperature. However, shaded ewes as compared to unshaded counterparts, showed higher mean value of packed cell volume (36.98 vs. 35.20%), total protein (5.16 vs. 4.35 gm dl) and globulin (3.33 vs. 2.30 gm/dl).

Four-day dehydration didn't affect the hemoglobin and packed cell volume as the treated ewes were able to compensate for a large amount of drinking water on the day of rehydration, preserving almost normal blood and plasma volume. Dehydration led to a significant increase in interstitial fluids as an adaptive mechanism for body temperature conserving water needed for evaporation.

It is evident that ewes suffering a combination of sun-exposure and dehydration couldn't persist their adaptive ability, which exhausted after one and half month, in terms of a considerable decline in blood and plasma volumes and hemoglobin concentration, in addition to not enough increase in albumin/globulin ratio. This proved clearly the necessity of relief effects of trees shadow at least for thirsty animals to avoid accumulative adverse effect of the combined stresses.

### INTRODUCTION

The breeding season of sheep raised in Egyptian deserts is concentrated in hot summer months. In the meantime, sheep are exposed to water restriction, even though they have higher requirements due to hot conditions and pregnancy as demonstrated by Macfarlane and Howard (1972). Repeated exposure to 3-day dehydration