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Hormonal and Antioxidant Variations During and out Rutting Season in Camels

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Abstract | In the current study, the serum levels of enzymatic antioxidants including glutathione peroxidase (GSH-Px), superoxide dismutase (SOD), and catalase (CAT) as well as hormonal factors such as cortisol, follicle-stimulating hormone (FSH), and estradiol, along with the non-hormonal factor malondialdehyde (MDA), were assessed in camels during and after the rutting season. Six she camels were used in this study in two different periods, the first out-rutting season in September and the second during the rutting season in January. Blood samples were collected from both periods and serum samples were tested for the main hormonal and antioxidant enzyme activity during and out of the rutting seasons. The findings demonstrated that while there was no discernible difference in CAT activity between the two periods, GSH-Px and SOD activity were much greater ($p<0.05$) during rutting season than it was during the non-rutting season. MDA, a measure of oxidative stress, showed a non-significant variation in its level during and after the rutting season in the current research. The results of the hormonal analysis showed that there was no change in cortisol levels between the rutting and non-rutting seasons, but there was a considerable rise in FSH and estradiol levels. In conclusion, a high correlation was observed between the tested hormones and enzymatic antioxidant activity during the camel rutting season, which coincided with the onset of seasonality.

Keywords | Camels, Enzymatic antioxidant, MDA, Oxidative stress, Rutting season

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INTRODUCTION

Camels are widely distributed animals in the world due to their economic and therapeutic importance. This species is also considered to be of little interest to researchers compared to other animals, especially in the field of reproductive techniques and improving the breed, as well as artificial insemination and determining seasonality (Abrhaley and Leta, 2018). Like many other mammals, camels have an estrous cycle (reproductive cycle), which typically lasts around 20-22 days and may be extend to 28 days and can vary depending on many factors such as species, environmental conditions, and individual physiology (Mohamed *et al*., 2021).

Camel's estrous cycle differs from other animals because they are classified as induced ovulatory animals, and the act of copulation triggers the ovulation of this species (Mohamed *et al*., 2021). The luteal phase is linked to ovulation; in the event that mating is unsuccessful, the estrus cycle is restricted to the follicular phase, and another cycle of estrus will start immediately without passing through the luteinizing phase (Skidmore *et al*., 1996). Additionally, the estrous cycle of camels can vary between different species, such as dromedary camels (single-humped camels) and Bactrian camels (double-humped camels) (Alfuraiji, 1999).