15th International Conference on
Climate Change & Environmental Science
November 21, 2025 | Webinar
Volume : 09

Melatonin modulates thermoregulatory and behavioural responses in donkeys kept in open field and subjected to packing during the hot-dry season

Ayodele Ake
University of Ibadan, Nigeria

Abstract

Pack donkeys are largely kept in the open field without any shelter in most tropical and subtropical countries. The study aim was to investigate the effects of packing (load-carrying) during hot-dry conditions in donkeys that were kept without shelter and pre-administered melatonin. Eighteen donkeys served as subject. They were divided randomly into two groups of nine animals per group. Group 1 donkeys were administered melatonin orally pre-packing (P+M), while group 2 donkeys were packed only without administration of melatonin (P only). Dry-bulb temperature (DBT) and temperature-humidity index (THI) were recorded pre- and post-packing, concurrently with the measurement of rectal temperature (RT), body surface temperatures (BST), respiratory and heart rates (RR and HR, respectively). Behavioural activities were recorded immediately (15 minutes) post-packing using animal focal method for 1-h. The values of DBT and THI were higher ($P < 0.05$) post-packing, indicating that the donkeys were exposed to hotter conditions post-packing. Pre-packing, the RT value obtained was significantly ($P < 0.05$) lower in the P+M donkeys (35.23 ± 0.2°C), compared with the value recorded in P only donkeys (35.73 ± 0.2°C). The frequencies of grooming (1.42 ± 0.6%) and walking (1.94 ± 0.1%) in P+M donkeys were significantly ($P < 0.05$) reduced, compared to the values recorded in donkeys without administration of melatonin (2.40 ± 0.5% and 4.95 ± 0.6%, respectively). In conclusion, the administration of melatonin pre-packing to donkeys kept in the open field and subjected to packing during the hot-dry season significantly ($P < 0.05$) reduced the RT, duration and frequency of grooming and walking. Pre-administration of melatonin to pack donkeys reduce the negative effects of heat stress on the behavioural and thermoregulatory responses of the donkeys during the hot-dry season.

Biography

AKE Ayodele Stephen is a Lecturer at the University of Ibadan, Registrar at the University of Ibadan Veterinary Teaching Hospital. He obtained the degrees of Doctor of Veterinary Medicine, Master of Science and Doctor of Philosophy in Veterinary Physiology from the Ahmadu Bello University, Zaria, in 2008, 2012 and 2023, respectively. His area of research has been focused on environmental, exercise physiology and oxidative stress.

Abstract received : May 18, 2025 | Abstract accepted : May 21, 2025 | Abstract published : November 21, 2025