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Physiological, biochemical and molecular responses to thermal stress in Ongole cattle

D B V Ramana, P K Pankaj, Rita Rani and M Nikhila
Central Research Institute for Dryland Agriculture, India

Heat stress is one of the most important stressors especially in tropical regions of the world. Exceptional challenges faced by grazing large ruminants in arid and semi-arid environments of India are numerous, but heat stress is one of the major challenges apart from fodder scarcity that animals have to deal with for a longer period of the year. High ambient temperatures outside the thermo - neutral zone cause significant changes in physiological processes including feed intake, production and reproduction. Alterations in ROS levels during severe heat stress are necessary for the regulation of several key physiological mechanisms including cell differentiation, apoptosis, cell proliferation and regulation of redox-sensitive signal transduction pathways. At molecular level heat stress evokes changes in gene expression of heat shock proteins and many other proteins. Altogether these physiological, biochemical and molecular responses makes the native animals to adapt, survive and produce better in harsh environments.

damarla97@gmail.com