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**Thermoregulatory responses of Holstein cows exposed to experimentally induced  
heat stress**

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**Abstract**

Heat stress (HS) adversely influences productivity and welfare of dairy cattle. We hypothesized that the thermoregulatory mechanisms vary depending on the exposure time to HS, with a cumulative effect on the adaptive responses and thermal strain of the cow. To identify the effect of HS on adaptive thermoregulatory mechanisms and predictors of caloric balance, Holstein cows were housed in climate chambers and randomly distributed into thermoneutral (TN; n=12) or HS (n=12) treatments for 16 days. Vaginal temperature (VT), rectal temperature (Tre), respiratory rate (RR), heart

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