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## **Use of South African native plants to alleviate heat stress-induced subfertility**

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Heat stress causes subfertility in males, contributing to significant economic losses in the U.S. dairy, beef, and swine industries. Scientist at the University of Western Cape recommended four herbs as candidates to mitigate the effects of heat stress: Sutherlandia (S), Tulbaghia violacea (T), Helichrysum (H) and Artemesia afra (A). Our objectives are to determine if these herbs reduce phenotypic effects caused by heat stress and determine how they effect gene expression changes associated with heat stress produced subfertility. Mature ICR male mice (n=36) were randomly assigned to one of six treatment groups: 1) thermoneutral (21 °C) control; 2) heat stress (35 °C for 24 hr = d 0) control; and 3-6) heat stress following five feedings of S, T or H (dried plants mixed 1:3 with mouse chow), and via water for A, respectively. Males were hemicastrated (d 1) and testes were collected for RNA isolation. Males proven fertile were each mated to 8 ICR females from d 18 to 26 post heat stress, a period when subfertility is expected. Pregnant females were sacrificed on d 17 of gestation. Post-stress body temperature was reduced in A, T and S when compared to the heat stress group. Body weight and consumption of S, T and H, but not A, were also less than controls ( $P < 0.05$ ). Compared to thermoneutral, heat stress reduced the number of females mated, except group A, which was similar to thermoneutral ( $P < 0.1$ ), but had no effect on other reproductive measures. We will quantify the expression of previously identified genes through real time RT-PCR.