**Circulating and Urinary Adrenal Corticosterone, Progesterone, and Estradiol in Response to Acute Stress in Female Mice (*Mus musculus*)**

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In studies of stress, it can be difficult to obtain blood rapidly enough to avoid confounding steroid measures. Noninvasive urinary steroid measures may provide an alternative insofar as they reflect systemic steroids. In Experiment 1, we profiled urinary corticosterone, progesterone, and estradiol in ovariectomized female mice following one hour on an elevated platform. This increased urinary corticosterone for 3 hours and progesterone for 4 hours. In Experiment 2, blood and urine samples were obtained at 0–6-hour stressor offset. Females showed increased serum corticosterone and progesterone immediately after stressor offset. Urinary corticosterone was increased at both 0 and 2 hours post-stress, while an increase in progesterone 2–6 hours after stressor offset was not significant. Estradiol was not influenced by this mild stressor. In Experiment 3, mice were exposed to a more severe one-hour stressor, a rat across a wire-mesh grid. In serum, both corticosterone and progesterone were elevated immediately after stressor offset and returned to baseline within 2 hours. In urine, this severe stressor elevated corticosterone immediately and 2 hours after stressor offset, and in progesterone 2 hours after stressor offset. Estradiol in serum was not dynamic, but it was significantly elevated in urine 4 hours after stressor offset. Urinary measures generally reflected systemic measures; however, with a different time course resulting in a longer return to baseline. We suggest that the relative value of serum or urinary steroid measures in mice depends upon the experimental design, and that estradiol may only respond when the stressor is severe.