

**Title: EXPOSURE TO ULTRASONIC NOISE ALTERS TEMPERATURE AND ADRENAL GLAND WEIGHTS OF *RATTUS NORVEGICUS* DAMS AND PUPS**

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**Background:** Ultrasonic noise (USN, >20 kHz) is a pervasive, often overlooked environmental stimulus perceived by animals (e.g., in laboratories, clinics, shelters, homes). Despite its potential to influence physiology and behaviour and confound animal studies, the effects of developmental USN exposure remain poorly understood.

**Hypothesis:** We hypothesized that peripartum USN exposure would result in physiological changes associated with hypothalamic-pituitary-adrenal axis activation (altered surface temperature and adrenal hyperplasia) in *R. norvegicus* dams and pups.

**Objectives:** 1) Assess effects of USN exposure on maternal and neonatal thermoregulation. 2) Assess effects of USN exposure on adrenal gland weight.

**Methods:** Ten pregnant Sprague Dawley rats (E13) were exposed to ultrasound (40 kHz, 70 dB SPL) (n = 5) or no noise (n = 5) beginning on E16 until weaning on postnatal day (PND) 21; pups were then maintained without noise until PND 42. Surface temperatures (eyes, ears, interscapular, tail) were assessed using infrared thermography. Adrenal gland weights of dams post-weaning and pups on PND 21/42 were determined.

**Results:** USN-exposed dams exhibited increased prepartum eye temperature ( $p = 0.0196$ ); no significant differences were observed in ear, body, or tail temperatures, or postpartum temperatures. USN-exposed pups had increased adrenal weights ( $p_L = 0.0021$ ,  $p_R = 0.0025$ ) on PND 21. No differences occurred in adrenal weight for dams or pups on PND 42.

**Conclusion:** These findings indicate that ultrasound induces physiological markers of stress in both dams and developing pups, supporting the need for further research investigating the role of USN as an environmental stressor and experimental confound.

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Neurosciences