[P1-182] MDMA (Ecstasy) Disrupts the Reproductive Axis in Male Rats.

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Serotonergic inputs into the preoptic area (POA) and hypothalamus modulate secretion of the reproductive hormone gonadotropin-releasing hormone (GnRH). Administration of 3,4-methylenedioxy-N-methylamphetamine (MDMA or "ecstasy," a recreational drug) to laboratory animals results in acute release of serotonin in several brain regions, including the hypothalamus. We therefore hypothesized that the reproductive axis is affected by chronic self-administration of MDMA, and assayed its function through quantification of POA-hypothalamic GnRH gene expression, serum luteinizing hormone (LH) concentrations, and serum testosterone (T) levels. Adult male Sprague-Dawley rats self-administered saline or MDMA either once (acute) or for 20 days (chronic), and were sacrificed 7 days following last administration, for a total of 4 treatment groups [acute MDMA, acute saline, chronic MDMA, and chronic saline]. GnRH gene expression in the POA-hypothalamus of chronic animals was measured using real-time PCR with the Stratagene Brilliant® qPCR kit and the Stratagene MX3000 detection system. For each sample, GnRH gene expression was normalized to cyclophilin and relative expression was determined. Serum LH levels in trunk blood samples were quantified by RIA, and serum T by ELISA. Results: No significant differences in GnRH mRNA or serum LH were detected between acute MDMA rats that self-administered a single dose of MDMA and acute saline rats that self administered a single dose of saline; however, serum T levels were significantly reduced in acute MDMA rats. Both GnRH mRNA levels and T concentrations were significantly reduced following chronic self-administration of MDMA. These latter results identify GnRH gene expression as a novel target for the effects of chronic MDMA in the brain of male rodents. Moreover, our finding that hypothalamic GnRH mRNA levels are suppressed in the context of low T concentrations suggests that the GnRH neuron may be a primary target of regulation and suggests inhibitory actions of chronically enhanced serotonergic activity induced by MDMA in the hypothalamus.

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POSTER SESSION: BASIC/CLINICAL - Endocrine Disruption II: Fetal Exposures, Reproduction & Thyroid (11:00 AM-12:00 PM and 2:30 PM-3:30 PM)