Abstract

Toxicology is increasingly focused on molecular events comprising adverse outcome pathways. Atrazine activates the hypothalamic-pituitary adrenal axis, but relationships to gonadal alterations are unknown. We characterized hormone profiles and adrenal (intact and castrate) and testis (intact) proteomes in rats after 3 days of exposure. The adrenal accounted for most of the serum progesterone and all of the corticosterone increases in intact and castrated males. Serum luteinizing hormone, androstenedione, and testosterone in intact males shared a non-monotonic response suggesting transition from an acute stimulatory to a latent inhibitory response to exposure. Eight adrenal proteins were significantly **altered** with dose. There were unique proteomic changes between the adrenals of intact and castrated males. Six testis proteins in intact males had non-monotonic responses that significantly correlated with serum testosterone. Different dose-response curves for steroids and proteins in the adrenal and testis reveal novel adverse outcome pathways in intact and castrated male rats.