

Cadmium exposure during pregnancy reduces birth weight and increases maternal and foetal glucocorticoids

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Cadmium exposure induces low birth weight through unknown mechanisms. Since low birth weight is associated to foetal exposure to high glucocorticoids (GC) concentrations, we hypothesized that low birth weight induced by prenatal exposure to Cd²⁺ is, at least in part, mediated by higher foetal exposure to GC, specifically corticosterone, the main active GC in rodents. Pregnant rats were exposed to different dose of CdCl₂ administered in drinking water during the whole pregnancy period. At term, corticosterone was measured by enzyme immunoassay in maternal and foetal blood and in placental tissues. Cadmium was determined in placentas, maternal tissues (liver and kidney) and foetuses by inductively coupled plasma-mass spectrometry (ICP-MS). Placental 11 β -hydroxysteroid dehydrogenase type 2 (11 β -HSD2) activity and expression were determined by a radiometric conversion assay and quantitative RT-PCR respectively. Results demonstrated that 50 ppm of Cd²⁺, which was accumulated in different ma