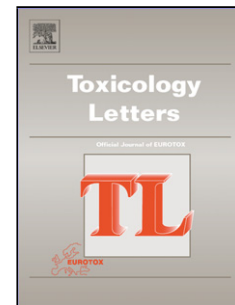


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Prenatal caffeine exposure increases adult female offspring rat's susceptibility to osteoarthritis *via* low-functional programming of cartilage IGF-1 with histone acetylation

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Highlights

- Caffeine delayed offsprings' cartilage development via low programming of IGF-1

Abstract:

Our previous *in vivo* studies showed that prenatal caffeine exposure (PCE) could restrain the development of chondrogenesis, which may delay fetal articular cartilage development and increase susceptibility to osteoarthritis in adults. So, the goal of the current study is to clarify the increasing susceptibility to adult osteoarthritis in caffeine-exposed female offspring and its' mechanism. Pregnant rats were treated with 120 mg/kg • d caffeine or equal volumes of saline from gestational day (GD) 9 to 20. Knee joints were collected from GD20 female fetuses and 18-week old female offspring which was treated with strenuous running for 6 weeks (55 min/day at 20 m/min) load to induce osteoarthritis. Knee joints from GD20 fetuses and adult offspring were collected for histochemistry and immunohistochemistry. Next, chondrocytes were isolated from 1-day-old newborn rats and *in vitro* studies were conducted where the cells in primary culture were exposed to 1, 10, and 100 μ M caffeine and 250, 500, and 1,250 nM corticosterone. Insulin-like growth

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