Low-dose effects of bisphenol A on early sexual development in male and female rats. - DTU Orbit (30/12/2018)

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Bisphenol A (BPA) is widely detected in human urine and blood. BPA has been reported to impair many endpoints for reproductive and neurological development; however, it is controversial whether BPA has effects in the microgram per kilogram dose range. The aim of the current study was to examine the influence of BPA on early sexual development in male and female rats at dose levels covering both regulatory no observed adverse effect levels (NOAELs) (5 and 50 mg/kg bw per day) as well as doses in the microgram per kilogram dose range (0.025 and 0.25 mg/kg bw per day). Time-mated Wistar rats (n=22) were gavaged during pregnancy and lactation from gestation day 7 to pup day 22 with 0, 0.025, 0.25, 5 or 50 mg/kg bw per day BPA. From 0.250 mg/kg and above, male anogenital distance (AGD) was significantly decreased, whereas decreased female AGD was seen from 0.025 mg/kg bw per day and above. Moreover, the incidence of nipple retention in males appeared to increase dose relatedly and the increase was statistically significant at 50 mg/kg per day. No significant changes in reproductive organ weights in the 16-day-old males and females and no signs of maternal toxicity were seen. The decreased AGD at birth in both sexes indicates effects on prenatal sexual development and provides new evidence of low-dose adverse effects of BPA in rats in the microgram per kilogram dose range. The NOAEL in this study is clearly below 5 mg/kg for BPA, which is used as the basis for establishment of the current tolerable daily intake (TDI) by EFSA; thus a reconsideration of the current TDI of BPA appears warranted.

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