Bladder dysfunction and lower urinary tract symptoms (LUTS) can affect quality of life
LUTS are multifactorial – variation in age, progression, severity
Voiding function can be influenced by environment
Polychlorinated biphenyls (PCBs) are persistent environmental toxicants, affect human health at varying levels of exposure
PCB effects on adult male voiding function is unknown

Our aim is to test the hypothesis that PCB exposure affects adult male voiding function.

Methods

- 10 wk C57Bl/6J wild type male mice
- Peanut butter and peanut oil vehicle
- MARBLES PCB Mix: 0 mg/kg, 0.1 mg/kg, 1 mg/kg, 6 mg/kg
- Every day for 60 days

PCB exposure has no effect on the frequency of urine spots

PCB exposure at the 1 mg/kg level alters flow rate in adult male mice

PCB exposure does not affect cystometry parameters

Ventral prostate mass increased after PCB exposure

Increased flow rate could mean altered contractile properties – further confirm with bladder & urethra bath contractility assays
Whether ventral prostate contributes to changes in flow rate is unclear
Further study on the ventral prostate to determine what is driving the increase in mass is necessary
Mice dosed at lower and higher dosage concentrations had no significant changes
Nonmonotonic dose response is commonly observed with PCBs, the mechanism driving this is not understood
Overall, our study in adult male voiding phenotypes may be relevant into understanding LUTS in adult males, and this warrants future studies into PCBs as risk factors.

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Conclusions

Figure 1. Adult male mice were exposed to PCBs through their diet for 60 days. VSA testing conducted on ages P125-P132. (A) Images of VSA. Parameters examined following the 4 hour testing period include (B) spot size distribution. Results are mean ± SEM, n=8. P values ≤ 0.05 as determined by (B) two-way ANOVA.

Figure 2. Adult male mice were exposed to PCBs through their diet for 60 days. Uroflowmetry conducted on ages P128-P133. Parameters examined following the 4 hour test period include (A) mass of void events, (B) time change of void events, and (C) the flow rate of void events. Results are mean ± SEM, n=6-8. A bar and * indicate significant difference. P values ≤ 0.05 as determined by (A-C) unpaired t-test.

Figure 3. Adult male mice were exposed to PCBs through their diet for 60 days. Cystometry was conducted on adult male mice ages P130-P137. Parameters examined following the test period include (A) interval interval and (B) normalized max voiding pressure [maximum subtracted from baseline pressure]. Results are mean ± SEM, n=6-7. P values ≤ 0.05 as determined by (A-B) unpaired t-test.

Figure 4. Adult male mice were exposed to PCBs through their diet for 60 days. Prostate and testes were collected following euthanasia at ages P130-P137. Quantification of average mass in (A) anterior prostate, (B) ventral prostate, (C) dorsal prostate, (D) testes, and (E) body mass. Results are mean ± SEM, n=8. A bar and * indicate significant difference. P values ≤ 0.05 as determined by (A-E) unpaired t-test.