SAT-719: Prenatal Exposure to Bisphenol A, S and F Increases Blood Pressure in Female Rats

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Cardiovascular diseases are the leading causes of mortality among men and women. With the new blood pressure guidelines from the American Heart Association, almost half of the United States population has hypertension (45.6%). The reasons for this high prevalence of hypertension in our population could be several, but the effect of emerging contaminants are overlooked and understudied. Bisphenol-A (BPA) is a widely used plasticizing agent that contaminates the environment. Most humans are exposed to BPA on a daily basis and urine levels of this endocrine disrupting chemical (EDC) are positively correlated with hypertension. The FDA banned the use of BPA in baby bottles in 2012, however, it is still being used in food containers and plastics. Currently, several BPA analogs such as bisphenol-S (BPS) and bisphenol-F (BPF) are used to replace BPA in the plastic industry. But their physiological effects are not clear. In order to study the effects of these EDCs on the development of hypertension, we exposed pregnant Sprague Dawley (SD) rats to saline, 5 µg/Kg BW of BPA, BPS or 1µg/kg BW of BPF. The offspring were allowed to reach adulthood before implantation with a radiotelemeter (Data Sciences International; HD-S10) in the femoral artery for undisturbed monitoring of systolic, diastolic and mean arterial blood pressure and heart rate. Recordings were measured once a week for 11 weeks over 24 hours to establish day and night readings. Night-time systolic BP was significantly elevated in BPA, BPF and BPS exposed rats compared to control. During the day, systolic BP was significantly higher in the BPA group compared to control. Diastolic BP was elevated in the BPS and BPF groups. Heart rate was elevated the most in the BPS group. These results indicate that prenatal exposure to low levels of BPA analogs has a profound effect on hypertension.