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Title: Sex differences in the effect of prenatal fluoxetine exposure on adult aggression in Syrian hamsters

Introduction:

Anti-depressants are commonly used to treat major depression and post-traumatic stress disorder, where 11% of Americans over age 12 are using anti-depressants. 17% experience major depression during pregnancy, where up to 10% of pregnant women use antidepressants. A large subset of these women use Prozac (fluoxetine) to treat major depressive symptoms, which crosses the placental barrier and is present in mother's breast milk. Thus, developmental exposure to fluoxetine can profoundly affect behavior and cognition. For example, prenatal and perinatal exposure to chronic fluoxetine increases adulthood aggression in male rats and mice. Prenatal and perinatal exposure to chronic fluoxetine improves spatial memory in adult male mice. There is little literature on the developmental exposure to fluoxetine in females and this literature does not investigate agonistic social behaviors, such as aggression. Furthermore, the effect of prenatal and perinatal exposure to fluoxetine on aggression in hamsters has not been studied. Therefore, we explored how prenatal and perinatal exposure to fluoxetine affected adulthood aggression in male and female Syrian hamsters.

Methods:

Female Syrian hamster were given fluoxetine via drinking water 7 days prior impregnation. Fluoxetine administration continue until offspring reached 12 days of age. The offspring were weaned, group-housed, and then single-housed. Animals were handled one week prior to behavioral testing. The following week, animals were tested for aggression in a neutral arena with a non-aggressive stimulus hamster of the same sex. Duration of aggression and latency to attack were quantified.

Expected Results:

We predict prenatal exposure to fluoxetine will increase aggression in males and females. The data will be gathered during the beginning of March.

Discussion:

Many neural regions in Syrian hamster have been shown to regulate social behavior. If we obtain a positive result, then we will study the anatomical and mechanistic effects of developmental exposure to fluoxetine, particularly in brain regions implicated in aggression. Aggression may be mediated by vasopressin cell activation in subnuclei of hypothalamus and serotonin cell activation in subnuclei of the raphe, because these areas control aggression in Syrian hamsters.