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Behavioral effects of Oxytocin Administration on Sensory Neurons of the VNO

Individuals with autism have been observed to show signs of social anxiety, often through aggression. It has previously been found that the vomeronasal organ (VNO) is associated with responses to social behaviors and social threat. Additionally, it has been seen through immunohistochemistry that there are oxytocin receptors present in the sensory portion of the VNO. However, the behavioral effects of oxytocin when administered to the VNO have not been studied. Because oxytocin has previously shown effects that promote bonding and prosocial interactions and it has been seen that there is a biological response in the VNO of mice to this neuropeptide, it is hypothesized that acute administration of oxytocin acting on sensory neurons of the VNO will decrease aggression in male mice. A series of double-blind resident-intruder procedures were performed where oxytocin or saline was administered intranasally in low, medium, and high (0.08 IU/Kg, 0.80 IU/Kg, and 8.00 IU/Kg). Onset and duration of social behaviors, such as dwell time, were recorded and analyzed with each subject serving as its own control. A decrease in mean dwell time was found at the low concentration of oxytocin which displays a decrease in aggression in the testing condition. No significance was seen between testing and control groups at medium concentrations of oxytocin. Further analysis of the high concentration testing condition is needed. After further analysis it will be determined if there is an optimum concentration, or range of concentrations, of oxytocin in the treatment of aggression.