Oxytocin may enhance social function in psychiatric disorders

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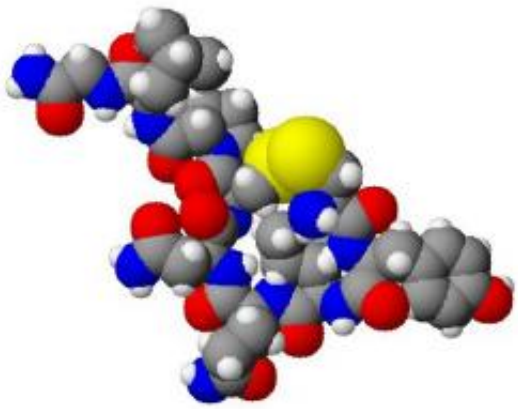

Spacefilling model of oxytocin. Created using ACD/ChemSketch 8.0, ACD/3D Viewer and The GIMP. Credit: Wikipedia.

Researchers at the Yerkes National Primate Research Center, Emory University, have shown inducing the release of brain oxytocin may be a viable therapeutic option for enhancing social function in psychiatric disorders, including autism spectrum disorders and schizophrenia. The study results are published today in the advance online edition of *Neuropsychopharmacology*.

The oxytocin system is well-known for creating a bond between a mother and her newborn baby, and oxytocin is a lead drug candidate for treating social deficits in autism. Getting synthetic oxytocin into the brain, however, is challenging because of a blood-brain barrier. In this new study, lead researchers Meera Modi, PhD, and Larry Young, PhD, demonstrated for the first time the potential of oxytocin-releasing drugs to activate the social brain, to create bonds and, they believe, to possibly treat social deficits in psychiatric disorders. Meera, who is now at Pfizer, was a graduate student at the Yerkes Research Center when she worked with Young on this research. Young is division chief of Behavioral Neuroscience and Psychiatric Disorders at the Yerkes National Primate Research Center, William P. Timmie professor in the Emory School of Medicine Department of Psychiatry, director of the Center for Translational Social Neuroscience at Emory and principal investigator and director of the NIH Silvio O. Conte Center at Emory.

The researchers used pair bonding in monogamous prairie voles as an index of prosocial effects. Normally mating in the voles is necessary for the release of brain oxytocin that leads to a monogamous bond. For the first time, however, the Yerkes researchers showed that a drug that activates melanocortin receptors stimulates release of oxytocin in the brain to affect social relationships. According to Young, a simple injection of the melanocortin drug quickly induced a pair bond in male and female prairie voles without mating, and that bond lasted long after the drug wore away. The researchers also showed the same drug activated oxytocin cells so the cells released oxytocin directly into the brain's reward centers responsible for generating bonds.

Young believes this new found ability to induce an enduring bond in voles means the drug can also enhance attention to and learning from social information in people who have social disorders.

"Our latest discovery opens a new avenue of research to harness the power of the brain's oxytocin system to enhance the ability to process social information that could profoundly affect treatment of social disorders, particularly when combined with behavioral therapies used to treat children on the autism spectrum," says Young.

The Yerkes Research Center, the National Institute of Mental Health and Autism Speaks funded this study, the publication of which comes less than two weeks after Young and co-author Catherine Barrett's "Perspective" titled "Can Oxytocin Treat Autism" appeared in *Science* magazine. Barrett is a

postdoctoral researcher at Yerkes.

Their perspective details the great potential and important limitations of current oxytocin therapeutic strategies. Young and Barrett are most optimistic the next generation approaches targeting oxytocin will excite the social brain by inducing brain cells to release oxytocin. Young says, "Imagine a drug that could induce the social attention and motivation a mother feels when nursing her infant or the bond between new lovers. This is exactly what we have shown in our latest oxytocin-related research and the chemical's viability to be a therapeutic target for enhancing social function in psychiatric disorders, including autism spectrum disorders and schizophrenia."

Provided by Emory University