

Oxytocin a Super Hormone: One Hormone Many Functions

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Review Article

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Abstract: This brief review article discussed historical aspects, known functions and roles as well as recent and ongoing research on Oxytocin hormone.

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INTRODUCTION

Oxytocin has been best known for its roles in female reproduction. It is released in large amounts during labor, and after stimulation of the nipples. It is a facilitator for childbirth and breastfeeding. However, recent studies have begun to investigate oxytocin's role in various behaviors, including orgasm, social recognition, bonding, and maternal behaviors [1].

BRIEF HISTORY OF OXYTOCIN

Sir Henry Dale discovered that extracts from the human posterior pituitary gland contracted the uterus of a pregnant cat. He coined the name oxytocin from the Greek words which literally meaning swift birth [2] Vincent du Vigneaud oxytocin, sequenced and synthesized oxytocin hormone for this achievement he was awarded the Nobel Prize in 1955 [3].

ONE HORMONE MANY FUNCTIONS

It is sometimes referred to as the "love hormone," because levels of oxytocin increase during hugging and orgasm. It may also have benefits as a treatment for a number of conditions, including depression, anxiety, and intestinal problems. It was reported that people in the first stages of romantic attachment had higher levels of oxytocin, compared with non-attached single people.

These levels persisted for at least 6 months. Sexual activity has been found to stimulate the release of oxytocin, and it appears to have a role in erection and orgasm. The reason for this is not fully understood, but, in women, it may be that the increased uterine motility may help sperm to reach their destination. Some have proposed a correlation between the concentration of oxytocin and the intensity of orgasm.

Brain oxytocin also appears to reduce stress responses, including anxiety. These effects have been seen in a number of species. The hormone has been described as "an important component of a complex neurochemical system that allows the body to adapt to highly emotive situations." [4]. Evidence also outlines a role for oxytocin in the prosocial effects of 3,4-methylenedioxymethamphetamine (MDMA, Ecstasy) in both rodents and humans. Clinical trials should now investigate the effectiveness of oxytocin as a novel intervention for psychostimulant addiction and should aim to determine its specific role in the therapeutic

properties of MDMA that are currently being investigated [5].

It's sometimes known as the "cuddle hormone" because it is released when people snuggle up or bond socially. Even playing with your dog can cause an oxytocin surge, according to a 2009 study published in the journal *Hormones and Behavior*. Oxytocin can also intensify memories of bonding gone bad, such as in cases where men have poor relationships with their mothers. It can also make people less accepting of people they see as outsiders. In other words, whether oxytocin makes you feel cuddly or suspicious of others depends on the environment [6].

Oxytocin does reduce cravings. Kovacs in a study demonstrated that when oxytocin was administered to rodents who were addicted to cocaine, morphine or heroin; the rats opted for less drugs or showed fewer symptoms of withdrawal [7].

It was also reported that oxytocin also reduces cravings for sweets. This way, can it emerge as a weight reducing and deaddiction agent? Oxytocin is

calming. Even a single rat injected with oxytocin has a calming effect on a cage full of anxious rats.

Table-1: Various functions and roles of the Oxytocin

Love hormone	Affection, attachment
Social bonding	trust
Happiness substance	Relieves phobias
Sexual arousal, erection, repetition	security
motherhood	mating
autism	Paternal behavior

Last two decades we have been searching for a cure of Autism and many scientists they studied the role of oxytocin in these people. In 1998, Modhal and colleagues found significantly lower level of oxytocin in plasma of autistic children [8]. In 2003, Hollander and associates found an overall decrease in autism spectrum repetitive behaviors if oxytocin was administered intravenously [9].

For all its positivity, however, oxytocin has a dark side. Or, more accurately, it plays a more complex role in human behavior than is commonly thought. As a facilitator of bonding among those who share similar characteristics, the hormone fosters distinctions between in-group and out-group members, and sets in motion favoritism toward in-group members and prejudice against those in out-groups. Ongoing research on the hormone is a potent reminder of the complexity of biological and psychological systems [10].

Therefore, the potential of oxytocin for drug targeting is immense. While it brings some hope for alleviating serious social disorders, the issue appears extremely complex to tackle, as the specificity of action might be difficult to control [11].

CONCLUSION

To conclude with as aptly mentioned by Magon and Kalra, from an innocuous agent as an aid in labor and delivery, to being touted as the latest party drug, oxytocin has come a long way. More research should be encouraged in this field in our country and across the world. Awareness should be generated about the exciting history of this hormone among reproductive and medical endocrinologists, just as it is for insulin [1].

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