Oxytocin

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AGENDA

Definition

Function

Puppy love

Oxytocin Trains Mouse Mom Hearing

The Hormones and Brain Regions Behind Eye Contact
Where is the love?

https://www.youtube.com/watch?v=WpYeekQkAdc
What is oxytocin -- from scientific prospect?

Oxytocin was discovered by Henry Dale in 1906.

Its molecular structure was determined in 1952.

Oxytocin is a neurotransmitter and a hormone that is produced in the hypothalamus.

From there, it is transported to and secreted by the pituitary gland, at the base of the brain.
Henry Hallet Dale
9 June 1875 – 23 July 1968
What is oxytocin -- function?

It plays a role in social bonding, sexual reproduction in both sexes, and during and after childbirth.

Known to activate receptors in the uterus and mammary glands, facilitating labor and milk letdown.

The neural mechanisms present in all mammal species.
1. Suckling stimulates nerves in the nipple and areola that travel to the hypothalamus.

2. In response, the hypothalamus stimulates the posterior pituitary to release oxytocin and the anterior pituitary to release prolactin.

3. Oxytocin stimulates lobules in the breast to let down (release) milk from storage. Prolactin stimulates additional milk production.
The love hormone?

Researcher found that people in the first stages of romantic attachment had higher levels of oxytocin.

These levels persisted for at least 6 months.
The love hormone?

Sexual activity has been found to stimulate the release of oxytocin 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.
IS IT OXYTOCIN?!  
No, it's love!
The social hormone?

Neuroscientist Bonnie Auyeung and colleagues found that those who received oxytocin via nasal spray showed increases in the number of fixations—pauses of about 300 milliseconds.
The social hormone?

Explanation

Because we receive so many social cues from the eye region.

If you’re not attending to those social cues,

you miss the opportunity to learn a lot about appropriate social behavior.
The social hormone?
Oxytocin as a drug

Oxytocin is used as a prescription drug under the brand name Pitocin.

Used to start birth contractions or strengthen them during labor

It helps reduce bleeding after delivery.

Side effects include a rapid heartbeat and unusual bleeding.
Heart beating
Unusual bleeding
Oxytocin as treatment for autism
Autism
A developmental disorder
Characterized by
- Troubles with social interaction and communication
- Incapable of appropriate social behaviors
- Lack of theory of mind
- Difficulty recognizing facial expressions
**Underlying Logics**

Nasal spray formulation of hormones rich with oxytocin receptors

- Increase in eye contacts

More social cues and enhanced neural synchronization

- Learning of appropriate social behaviors, communication, and empathy
Is there bonding in terms of oxytocin between different species?
Puppy Love

- Hormonal bond forming between different species
- Spike of oxytocin in dog-owner pairs after 30-minute interaction
- The more time spent in making eye contacts, the more oxytocin is released
- 130% rise in dogs, 300% bump in humans
- Administering oxytocin to female dogs increases the time they spent looking into their owners’ eyes
- May be the result of coevolution
How does oxytocin work in other species?
Oxytocin Trains Mouse Mom Hearing

- Oxytocin alters activity in mouse mom’s left auditory cortex
- Making mouse mom more in tune with lost pups’ distress crying
- Respond to pups that even aren’t their own
- Virgin female mouses generally ignore the calls
- Injection of oxytocin makes virgin females have same response as mouse moms
- Oxytocin turns up the volume of social information processed in the brain
What is alexithymia?
A PERSONALITY TRAIT CHARACTERIZED BY DEFICITS IN THE ABILITY TO IDENTIFY AND DESCRIBE ONE'S OWN EMOTION
Symptoms

- difficulty identifying different types of feelings
- limited understanding of what caused the feelings
- difficulty verbalizing feelings
-...
How does Alexithymia affect our lives?
Alexithymia is comorbid with mental disorders like...

- Obsessive-compulsive Disorder (OCD)
- Addiction
Also, Alexithymia affects people’s physical health.
What causes Alexithymia?
1. **Childhood**
   - Parents’ emotional abuse and neglect;

2. **Culture**
   - more traditional and collectivist society;

3. **Gender**
   - men are discouraged to express their emotions
What happens to alexithymic individuals’ brain?
What happens to alexithymic individuals’ brain?

Less information is transferred between the two sides of the brains – struggle to integrate information.
What happens to alexithymic individuals’ brain?

less gray matter in the anterior insula – interoception
**How does alexithymia relate to oxytocin?**

1. Oxytocin dampens activity of physiological stress-system and increases parasympathetic activity, and regulates glucocorticoid receptor expression in the hippocampus.
How does alexithymia relate to oxytocin?

2. Construction of internal model regulation of the growth of the neocortex and the maintenance of the blood supply
How does alexithymia relate to oxytocin?

3. oxytocin unfolds effects on a higher level of brain functioning – novel emotional experiences.

https://www.sharecare.com/health/emotional-health/some-symptoms-alexithymia


https://en.wikiversity.org/wiki/Motivation_and_emotion/Book/2015/Alexithymia