

the myth of the LOVE HORMONE

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There is a molecule intimately involved in your sex life. However, its effects are not as straightforward as some would make you think.

It has been touted as a love hormone, a diet aid, a generosity increaser, pain reliever and antidepressant. Oxytocin has such a sunny reputation that it sounds almost like a too-good-to-be-true drug. This hormone, released in the brain when we have sex, hug, shake hands, nurse babies and have other kinds of social contact, has been the subject of a vast array of scientific studies over the past decade.

News stories on all the great things oxytocin can do for us crop up rather often. The claim is that all you have to do is take a whiff from a nasal spray or put a drop under your tongue and the “love hormone” will fix a multitude of issues and dramatically improve your life. You can even buy it on Amazon and keep it in your fridge for daily use.

Wake Up and Smell the Oxytocin

While the increasing public interest in oxytocin has helped create a surge in studies exploring the effects of the hormone, calling it the “cuddle chemical” or “love hormone” is a gross simplification, and researchers agree that it’s a rather misleading moniker. Professor Larry Young, a behavioural neuroscientist and director of the Center for Translational Social Neuroscience at Emory University, points out that oxytocin may well be one of the chemicals in the cocktail of hormones that leads to sexual attraction and love. However, it’s more to do with how it sharpens our vision when we socialise.

Young, who published a book on sex and attraction last year called *The Chemistry Between Us*, believes that oxytocin is there to make us pay attention to minute social cues. “We’re social beings. When we’re around others, our brain focuses attention to look at their face and eyes. We focus in on little muscle twitches and are able to think about what they are thinking about.”

A/Prof Adam Guastella of the University of Sydney’s Brain & Mind Research Institute agrees. “I don’t think there is a love hormone on its own,” he says. While oxytocin is definitely an important player when we meet that special someone, lose appetite and start writing bad poetry, there is more to love than oxytocin. And there is more to oxytocin, too.

Bonding Rather Than Loving

In evolutionary terms, oxytocin is the molecule that helps a mother bond with her babies and become more nurturing. In the beginning of the 20th century scientists figured out that the hormone, released in the woman’s brain in large amounts during childbirth, facilitates both the physiological process of childbirth as well as maternal bonding and breastfeeding. All female mammals have brain systems designed to make them become attached to their babies, and oxytocin plays a major role here.

However, further research has established that oxytocin is consistently involved in bond formation more generally, such as in between two partners in a monogamous species, like humans. However, the job to keep a relationship going is not up to oxytocin alone. There are other chemicals involved, such as dopamine, which takes care of reinforcement learning, and opiates, which are involved in rewarding us with pleasure.

In this neurochemical context, oxytocin itself does not provide pleasure or excitement. But it does heighten one’s sensitivity to social cues, says Young. And then all the brain has to do is to connect the dots between the social cues from one’s partner and the pleasant sensations from interacting with them, for example, during sex. As a result of this positive reinforcement, we want more of the nice stuff we just got, so we pay even more attention to our partners.

Oxytocin is the molecule that helps a mother bond with her baby, and also to fiercely protect it from those she doesn't trust.



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Not a Bed of Roses

Even though a lot of the positive claims about oxytocin are backed up by sound evidence, sometimes the conclusions go a bit far. Dr Paul Zak of Claremont Graduate University in Southern California has famously dubbed oxytocin the “moral molecule”. In a vastly popular TED talk he argues that oxytocin increases trustworthiness, and everyone would be better off with more of the hormone in their systems.

However, Young points out that while oxytocin does increase our social sensitivity, and perhaps makes us feel more in tune with the other person's emotions, there is also strong evidence that oxytocin is involved in situations of increased anger and aggression.

To understand this, remember the role oxytocin plays in mother-child bonding in the mammal world. The mother, her brain swimming in oxytocin, is gentle and caring when it comes to her newborn. However, she will fiercely protect her baby from anyone she can't trust, such as the individuals from a rival peer group.

When we apply that to social situations it becomes clear that oxytocin is likely to make you friendlier towards someone you already know and trust, but not strangers. Indeed, there have been studies that show how oxytocin increases favouritism of one's own ethnic group at the expense of others. Scientists have also found that oxytocin makes you less cooperative if you have to perform a task with someone you don't know.



“The feel-good drug that makes it seem like you’re looking through rose-tinted glasses, that’s a very pop psychology perception,” says Guastella. There is nothing particularly “moral” about oxytocin or any other molecule.

What Is It Good For?

While it is clear that the hormone is hardly a magical love potion, its positive effects on human psychology and behaviour are still driving fruitful research. One of the most promising recent research avenues is oxytocin administration to autistic children. After showing that oxytocin has the power to make humans pay attention to positive social cues, Guastella has been investigating whether there is potential to use the hormone as a medication that can address some of the social functioning problems in autism.

An often debilitating mental disorder, autism causes life-long problems for the parents, the carers and the individual. The lack of effective treatment often spurs the parents in vulnerable families affected by autism to look for help by any means possible. “People are spending tens of thousands of dollars on half-baked quasi-treatment approaches sold typically by evangelical types, and get very little benefit,” Guastella says. “So, when a medication comes along which seems to improve, even to a small degree, some of the core aspects of the condition, there is obviously going to be a lot of excitement and hope.”

So far the results have been promising, but the research is still very new, Guastella warns. Single-dose oxytocin studies have shown interesting social functioning benefits in the short term,

and there are yet-undisclosed results on multi-dose studies to be published later this year.

Young is cautious, but optimistic about the prospects of oxytocin treatment. “I do believe we can use oxytocin in some way to improve social functioning in autism, but we need to be very clever about how to do it, by taking advantage of the precise effects that it has on the brain,” he says. “For example, I think that combining oxytocin treatment with behavioural therapies where you can help the child become more connected with the therapist, may help those children then gain more benefit from the therapy.”

However, it is very important to keep in mind that the current findings on this topic are preliminary. It is much too early for parents to go out and get a nasal spray for their autistic child in the hope that it’s going to be a miracle drug.

Guastella and his team are hard at work to deliver more decisive results. “We want to provide some data to either back up or not back up the use of oxytocin to treat autism. The sooner the real critical data gets published, the sooner parents will be in a position to decide whether they should use it or not.”

Still More Questions To Be Answered

Even though the studies and the news stories have been piling up, there is still a lot to be learned about how exactly oxytocin works from a biological perspective. More research is needed to try and figure out what oxytocin is really doing in the brain and what neurochemical systems are involved. Young emphasises that a more precise picture on the hormone’s interactions in the brain can help tailor better treatments for social functioning.

Guastella agrees that delving into the fine detail of the neurochemistry of emotions would eventually lead to more effective use of oxytocin. “I think there is a really exciting opportunity to get more precise about how to target that mechanism. I doubt that the nasal spray that we’re using is the best way to target the mechanism of emotion recognition.”

While oxytocin is not simply the love hormone or the moral molecule, the complexities revealed by recent science don’t make it any less interesting. Quite to the contrary, particularly given its potential to unlock the secrets of social bonding and healthy relationships. And perhaps it can even help treat social functioning problems in autism and similar disorders.

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