Sexual and social behaviour modified by serotonin system drugs

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The common marmoset.

Drugs that bind to specific serotonin receptors in the brain can both improve and impair female sexual function in non-human primates. These are the findings of a study conducted by Leiden PhD candidate Yves Aubert and colleagues at the division of Medical Pharmacology of the Leiden Academic Center for Drug Research (LACDR & LUMC).

'It's all about the relationship'

Aubert carried out his research in co-operation with the Wisconsin National Primate Research Center at the University of Wisconsin-Madison. 'Relationship dynamics between partners are a key factor in determining female sexual behaviour,' Aubert concludes from experiments conducted in common marmosets, a species of New World monkeys that form long-term pair-bonds similar to those of

humans. After treating female marmosets for several weeks with drugs that have specific serotonin receptor binding properties, Aubert was surprised to find not only changes in the females' sexual and social behaviour directed at their male pairmates, but also changes in the males' behaviour towards the females. In an innovative approach, he used two experimental drugs in his experiments that resulted in opposite behavioural effects. One drug (8-OH-DPAT) had a negative impact on female sexual and social behaviour, while the other had a positive impact, as Aubert demonstrated for the first time in a non-human primate. 'Clearly, pair-bond quality between partners and sexual behaviour are closely linked. While one drug increases aggression between male and female and sexual rejection of the male by the female partner, the other drug increases social grooming between pairmates and enhances the female's sexual attractiveness to her male partner.'

A pharmacotherapeutic treatment option for women suffering from HSDD?

The drug with the positive impact, called Flibanserin, was developed as a potential non-hormonal treatment for pre-menopausal women with hypoactive sexual desire disorder (HSDD). HSDD is the most commonly reported female sexual complaint and is characterised by a persistent lack of sexual fantasies or desire that causes marked personal distress and/or personal difficulties. Aubert suggests that Flibanserin's therapeutic effects in women with HSDD may stem from improvements in sexual, social and emotional bonding between partners.

Unraveling the neurobiology of female sexual behaviour

Using a monkey model provided the researchers with the opportunity to ask detailed questions about the neurobiological underpinnings of female

sexual behaviour. Aubert and his teams of researchers in Madison (Wisconsin) and in Leiden conducted endocrine, imaging and genetic experiments to learn about hormonal and brain activity and gene expression patterns that are involved in the processes leading to impaired or improved female sexual and social behaviour. 'I believe that our results provide new leads and may spur renewed interest in the study of female sexual function – a topic that has been a taboo, or marginalised, for too long,' comments Aubert. 'Our study suggests that oxytocin may be the pivot of serotonergic regulation of female sexual behaviour, pair-bond and pharmacotherapy of HSDD; a finding that warrants attention in future studies.'

More information: PhD defence: Yves Aubert, Sex, aggression and pair-bond.

Provided by Leiden University

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