Breastfeeding love hormone that helps the bond with baby

By David Derbyshire

Scientists have discovered the secret behind how breastfeeding helps mothers bond with their babies.

Childcare experts have long known that the closeness and intimacy of breastfeeding strengthens maternal affection.

But a study out today has discovered that the action of a baby sucking actually changes how the mother's brain behaves.

This results in a massive rush of the 'love hormone' oxytocin in women's brains.

The release of the chemical in massive surges enhances a mother's feelings of trust, love and affection, scientists say.

Oxytocin, also known as the trust or cuddle hormone, is produced naturally in the hypothalamus – a part of the brain the size of an almond that controls body temperature, thirst, hunger, anger and tiredness.

The hormone is involved in sex and sexual attraction, promotes feeling of trust and confidence and helps to reduce fear.

It is released into the blood during labour – triggering the production of breast milk – and floods the brain during breastfeeding.

But until now it was not known how the few thousand brain cells capable of releasing oxytocin could generate enough to alter a mother's mood.

Today's study, published in the journal Public Library of Science Computational Biology, offers an answer.

Normally brain cells, or neurons, release chemicals such as oxytocin in relatively small amounts from their nerve endings.

But the research team, led by Warwick University scientists, has shown that when a baby suckles, the mother's neurons respond by churning out the hormone from their dendrites – the part of the cell that usually receives, rather than transmits information.

This extra release of oxytocin creates much stronger links between nerve cells – creating a 'positive-feedback' loop, where the greater the concentration of the chemical, the faster it is produced.

This allows massive, intense, bursts of the love hormone to sweep through the brain at intervals of around five minutes. The findings could shed light on other chemical changes in the brain linked to mood.

Professor Jianfeng Feng, who demonstrated the effect, said: 'We knew that these pulses arise because, during suckling, oxytocin neurons fire together in dramatic synchronised bursts.

'But exactly how these bursts arise has been a major problem that has until now eluded explanation.

'This research has allowed us to incorporate all the latest research in a large computational model of the whole population of oxytocin cells.' In this model we have shown that the dendritic interactions are enhanced enough to trigger a massive positive-feedback on activity.

'The model gives us a possible explanation of an important event in the brain that could be used to study and explain many other similar brain activities.' Oxytocin is attracting increasing interest from researchers investigating human behaviour.

Scientists believe it could be turned into a cure for shyness, and used to treat autism, depression and anxiety.

d.derbyshire@dailymail.co.uk

FACT FILE

- Nicknamed the love hormone, oxytocin is released during sex, childbirth and breastfeeding.
- In studies, those given it were far more trusting of strangers with their money. It also lowers anxiety and fear and increases risk-taking.
- Virgin ewes given oxytocin show maternal behaviour to lambs.
- Voles given the hormone are more likely to pair up.
- It is so good at reducing stress and encouraging friendship that oxytocin is being tested as a cure for extreme shyness.
- Some scientists have proposed spraying a fine mist of the chemical over violent mobs to calm them.

Coverage is reproduced under licence from the NLA, CLA or other copyright owner. No further copying (including the printing of digital cuttings), digital reproduction or forwarding is permitted except under licence from the NLA, http://www.nla.co.uk (for newspapers) CLA, http://www.cla.co.uk (for books & magazines) or other copyright body.