

# New insights into breast-feeding hormone

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(PhysOrg.com) -- A mechanism for regulating the hormone prolactin has newly been revealed by scientists at Karolinska Institutet, Sweden. The results are to be published in the scientific journal Neuron, and may be significant for conditions and functions such as breast-feeding, sexual libido, and metabolism.

The hormone, prolactin, is released from the pituitary gland in the brain and is the signal that triggers [breast milk](#) production during nursing. The reason that women normally do not produce milk - and men never do - is that the release of prolactin is normally strongly inhibited by the signal substance dopamine. This is secreted by cells known as "TIDA" [neurons](#) in the [hypothalamus](#) in the brain.

A research group at Karolinska Institutet has now for the first time investigated the [electrical activity](#) of the dopamine-producing TIDA cells, in order to understand in more depth the regulation of prolactin. The study has shown that the cells normally display an extremely rhythmical activity, with discharges every 20 seconds. The scientists believe that this rhythmical behaviour lies behind the ability of the TIDA cells to function as a strong inhibitor of prolactin release.

"It is known that rhythmical signalling makes it possible for [nerve cells](#) to release large quantities of signal substances", says Christian Broberger, who has led the study.

The study has also shown that TRH (thyrotropin-releasing hormone), a signal substance that is known to stimulate the release of prolactin, can

interrupt the rhythmical signalling pattern of TIDA cells.

Prolactin plays important roles in reproduction and fertility, one of which is reduction of sexual libido. Prolactin is released during orgasm. It is believed that prolactin is significant for [metabolism](#), since patients with elevated levels of prolactin can become overweight. Levels of prolactin often rise in patients who are treated with dopamine inhibitors for psychotic disorders, and these patients often experience loss of libido and sometimes the production of breast milk as undesired effects.

"Our results increase the possibility of being able to treat problems of prolactin release, not least the undesired effects that arise when using drugs that inhibit dopamine", says Christian Broberger.

**More information:** David J. Lyons, Emilia Horjales-Araujo och Christian Broberger, Synchronized Network Oscillations in Rat Tuberoinfundibular Dopamine Neurons: Switch to Tonic Discharge by Thyrotropin-Releasing Hormone, *Neuron* 27 Jan 2010

Provided by Karolinska Institutet

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