News
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***Researchers find brain hormone stimulates lactation.

DALLAS--Out grocery shopping, a new mother hears another person's baby cry. Suddenly she feels her breasts swell with milk and she hurries to get home to nurse her baby.

Breastfeeding mothers know that a psychological cue can create great discomfort from breast engorgement, especially during times when the mother is away from her baby or when her baby refuses to nurse.

This phenomenon of the lactation response is being studied by a research team at The University of Texas Health Science Center at Dallas.

Findings reveal that two hormones known to act in the breast--oxytocin and prolactin--interact in the brain's pituitary gland to cause lactation. At UTHSCD, scientists in the field of neuroendocrinology are conducting precise tests for chemicals in the brain that initiate or inhibit this and other mind-body relationships.

"Before now it was thought that the two hormones worked in the breasts but were not related in the pituitary gland," says Dr. Michael Lumpkin, a postdoctoral fellow in the Department of Physiology. Lumpkin reported on the research at a recent meeting ot the Endocrine Society.

The roles of oxytocin and prolactin in the breasts have long been recognized. There, the hormones work jointly with prolactin stimulating milk production and oxytocin stimulating smooth muscle contraction for the expulsion of milk from the breasts. Suckling provides the stimulus for milk secretion, as well as milk expulsion.

Whether the stimulus comes from a psychological cue or from a suckling reflex, the researcher's findings suggest oxytocin is released from the hypothalamus (part of the brain over the pituitary) to stimulate prolactin cells within the pituitary. The oxytocin then may be carried to the pituitary gland by the bloodstream and there stimulates the release of prolactin. The suckling reflex can cause a signal to travel nerve pathways from the breast to stimulate the release of oxytocin by nerve cells in the brain.

Lumpkin's studies suggest that oxytocin is a missing "prolactin releasing factor" that several scientific teams searched for in earlier years and abandoned after failing to agree upon oxytocin's role in prolactin release. The insensitive hormone detection techniques available at that time contributed to this stalemate.

After brain-pituitary interaction, the two hormones are released and carried by the blood to the breasts where they stimulate milk production and expulsion, says Lumpkin. Oxytocin seems to turn off its own secretion after releasing prolactin. Without sufficient oxytocin to stimulate its release from the pituitary, the output of prolactin may be reduced.

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Findings were compiled by evaluating blood drawn from conscious, freely moving rats and by observing cultured prolactin cells that were stimulated to release their contents by synthetic oxytocin. Researchers found a dose-related release of prolactin in the cultured cells exposed to oxytocin. Lumpkin's collaborator Dr. W.K. Samson and his supervisor Dr. S.M. McCann have found that during lactation oxytocin in the blood of the rodent increases immediately before prolactin release. Other researchers have found this to be true in lactating women.

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