

Society for Endocrinology – Media Release

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Researchers show hormone offers hope as a new fertility treatment.

A group of scientists at Hammersmith Hospital, Imperial College London, have shown for the first time that giving women the hormone kisspeptin stimulates release of the sex hormones which control periods. This finding suggests that kisspeptin could be a potential new treatment for fertility.

Kisspeptin is a hormone coded by the KiSS-1 gene. This gene was discovered in Hershey, Pennsylvania, and researchers decided to name it after the town's most famous product, the Hershey chocolate "Kiss". Animals and humans lacking kisspeptin function do not go through puberty and remain sexually immature.

The scientists at Imperial College injected a small group of healthy female volunteers with the hormone kisspeptin. Soon after injection the volunteers showed a rise in their circulating concentrations of luteinising hormone (LH), a hormone which can be used to stimulate the ovary in fertility treatment. Kisspeptin increased LH concentrations at all stages of the menstrual cycle, but the effect was greatest in the pre ovulation phase, which is essential for fertility. This is the first time that kisspeptin has been shown to have a stimulatory effect on LH in women.

It's likely that the next steps will be to test the effects of kisspeptin in patients with disorders of sexual regulation.

Researcher Dr Waljit Dhillon said

'Kisspeptin has previously been shown to potently stimulate hormone release in animals, but this is the first time that it has been shown to stimulate sex hormone release in women. Kisspeptin is a promising new tool for the restoration of normal reproductive function in women with low sex hormone levels'.

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Notes for editors.

The paper will be presented at the Society for Endocrinology Spring meeting at 08:30 on Tues 6th March. The abstract for this work is reproduced below: see <http://www.endocrine-abstracts.org/ea/0013/ea0013oc17.htm>. Note that this talk has won the Novartis Clinical Endocrinology Award.

The Society for Endocrinology Spring Meeting is Britain's biggest hormone meeting, and is taking place at the ICC, Birmingham, from 5-8 March.

Please mention this meeting in any story.

For more information please contact Tom Parkhill or Jo Thurston on 01454 642230 or 07971 691774.

ABSTRACT:

Kisspeptin-54 potently stimulates luteinising hormone release during the preovulatory phase of the menstrual cycle in healthy human females.

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Kisspeptin, the endogenous ligand of the GPR54 receptor, is a key regulator of the hypothalamo-pituitary-gonadal (HPG) axis. GPR54-null mice exhibit reproductive dysfunction and exogenous kisspeptin potently stimulates the HPG axis in rodents, primates and human males. The effects of kisspeptin administration to human females are not known.

Aim: To investigate the effects of kisspeptin on luteinising hormone (LH) release during the menstrual cycle in female volunteers.

Methods: (1) Volunteers received a sc bolus injection of kisspeptin-54 (0, 0.2, 0.4, 0.8, 1.6, 3.2, 6.4, 12.8 nmol/kg, $n=3$ per dose) in the follicular phase.

(2) Volunteers ($n=6$) attended on six occasions each: twice in each of the follicular, preovulatory and luteal phases. They received a sc bolus injection of either kisspeptin-54 (0.4 nmol/kg) or 0.9% saline in random order during each phase of the menstrual cycle. The local ethics committee approved this study.

Results: (1) Kisspeptin-54 caused a dose-dependent increase in mean LH over time at doses from 0.2 to 6.4 nmol/kg.

(2) Kisspeptin-54 increased plasma LH compared to saline injection in all phases of the cycle. Sensitivity to kisspeptin was greatest in the preovulatory phase and least in the follicular phase of the cycle [mean increase in LH over baseline (IU/L) \pm S.E.M.: *follicular phase*: 0.12 ± 0.17 ; *preovulatory phase*: 20.64 ± 2.91 ($P < 0.001$ vs follicular phase); *luteal phase*: 2.17 ± 0.79 ($P < 0.01$ vs follicular phase)].

Conclusion: This is the first report demonstrating that elevation of plasma kisspeptin in human females potently stimulates LH release in the preovulatory phase. We also demonstrated that subcutaneous injection is a feasible route of administration of kisspeptin-54. Thus kisspeptin may form the basis of a novel therapy for infertility.