

Clinical studies to examine the effects of intranasal kisspeptin delivery on reproductive hormones

Submission date 08/03/2022	Recruitment status No longer recruiting	☐ Prospectively registered ☐ Protocol
Registration date 09/03/2022	Overall study status Completed	☐ Statistical analysis plan ☒ Results
Last Edited 22/08/2025	Condition category Nutritional, Metabolic, Endocrine	☐ Individual participant data

Plain English summary of protocol

Background and study aims:

Kisspeptin is a hormone which acts as the master regulator of reproductive hormone release in humans. Clinical studies demonstrate that intravenous (into a vein) or subcutaneous (under the skin) kisspeptin administration could be used to treat reproductive disorders. A non-invasive delivery route would be preferable to patients and clinicians. To address this, the aim of this study is to find out whether intranasal administration (snorting) of kisspeptin can stimulate reproductive hormone release in healthy volunteers and patients with reproductive disorders.

Who can participate?

Healthy men and women and patients with reproductive disorders, aged 18 – 70 years

What does the study involve?

Participants will attend at least two study visits at least 1 week apart at the Clinical Research Unit (Charing Cross Hospital, London). At one visit kisspeptin will be self-administered using a nasal spray device and at the other visit a placebo (dummy drug) will be used instead. Blood samples will be collected through a cannula (tube) every 15 minutes for 4 hours to measure reproductive hormone release.

What are the possible benefits and risks of participating?

Kisspeptin is a naturally occurring hormone which has been given to over 500 men and women without complications or side effects. The main benefit will be to help develop a future treatment for patients with reproductive disorders.

When is the study starting and how long is it expected to run for?

June 2017 to April 2024

Who is funding the study?

1. Medical Research Council (MRC) (UK)
2. National Institute for Health Research (NIHR) (UK)

Who is the main contact?
Dr Edouard Mills
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Contact information

Type(s)

Public

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Additional identifiers

Integrated Research Application System (IRAS)
232585

Protocol serial number

Protocol version 4

Study information

Scientific Title

Investigating the effects of intranasal kisspeptin administration on reproductive hormone secretion

Study objectives

Intranasal kisspeptin administration stimulates reproductive hormone secretion in healthy volunteers and patients with common reproductive disorders.

Ethics approval required

Old ethics approval format

Ethics approval(s)

Approved 12/10/2017, London Riverside Research Ethics Committee (Chelsea & Westminster Hospital, 369 Fulham Road, London, SW10 9NH, UK; +44 (0)20 7104 8112; riverside.rec@hra.nhs.uk), REC ref: 17/LO/1504

Primary study design

Interventional

Study design

Randomized placebo-controlled cross-over study

Study type(s)

Treatment

Health condition(s) or problem(s) studied

Reproductive disorders

Interventions

Randomised, placebo-controlled, cross-over study in healthy volunteers (men and women) and patients with common reproductive disorders (including hypothalamic amenorrhoea). Following self-administration of intranasal kisspeptin (dose range 3.2 to 25.6 nmol/kg) or placebo using a nasal spray device, serum reproductive hormones are measured every 15 minutes for 4 hours. Study visits will be at least 1 week apart to ensure washout, with the order of the interventions randomised (using <https://www.randomizer.org>).

Intervention Type

Drug

Phase

Phase I

Drug/device/biological/vaccine name(s)

Kisspeptin-54

Primary outcome(s)

Blood levels of reproductive hormones (kisspeptin, luteinizing hormone, follicle stimulating hormone, testosterone [men] and oestradiol/progesterone [women]) measured using automated chemiluminescent immunoassays at baseline and every 15 minutes for 4 hours

Key secondary outcome(s)

1. Safety monitoring: heart rate, blood pressure, and the presence of adverse symptoms measured using automated blood pressure monitor every 15 minutes for 4 hours
2. Behavioural parameters of reproductive behaviour assessed using validated psychometric questionnaires (including the Sexual Arousal and Desire Inventory, Positive and Negative Affect Schedule, and State-Trait-Anxiety-Inventory) at baseline and every hour until 4 hours

Completion date

01/04/2024

Eligibility

Key inclusion criteria

Healthy volunteers:

1. Aged 18–70 years
2. Non-smokers
3. Free of current or past physical or psychiatric illness
4. Naïve to psychoactive substances, prescribed or illicit, for a minimum of 6 months prior to screening.
5. Regular menstrual cycles (women)

For patients with common reproductive disorders:

1. Patients diagnosed in accordance with established guidelines (e.g. Endocrine Society guidelines for hypothalamic amenorrhoea)

Participant type(s)

Mixed

Healthy volunteers allowed

No

Age group

Adult

Lower age limit

18 Years

Upper age limit

70 Years

Sex

All

Total final enrolment

34

Key exclusion criteria

1. History of any medical, psychological or other condition, or use of any medications, including over-the-counter products and hormonal therapies, which, in the opinion of the investigators, would either interfere with the study or potentially cause harm to the participant
2. Medical or psychological conditions that would impair their ability to participate reliably in the

study or give informed consent

3. Pregnancy and/or breastfeeding

4. Without access at home to a telephone, or other factor likely to interfere with ability to participate reliably in the study

5. History of hypersensitivity to any of the components administered

6. Treatment with an investigational drug within the preceding 2 months

7. Those who have or intend to donate blood or blood products within three months before or following study completion

8. A history of major haematological, renal, thyroid or hepatic abnormalities or significant cardiovascular disease

9. A history of cancer

Date of first enrolment

14/01/2020

Date of final enrolment

01/12/2023

Locations

Countries of recruitment

United Kingdom

England

Study participating centre

Imperial College London

Clinical Research Unit

Charing Cross Hospital

Fulham Palace Rd

London

United Kingdom

W6 8RF

Sponsor information

Organisation

Imperial College London

ROR

<https://ror.org/041kmwe10>

Funder(s)

Funder type

Research council

Funder Name

Medical Research Council

Alternative Name(s)

Medical Research Council (United Kingdom), UK Medical Research Council, Medical Research Committee and Advisory Council, MRC

Funding Body Type

Government organisation

Funding Body Subtype

National government

Location

United Kingdom

Funder Name

National Institute for Health Research

Alternative Name(s)

NIHR Biomedical Research Centre Bristol, National Institute for Health Research Bristol Biomedical Research Centre, NIHR Bristol BRC, Bristol BRC, Bristol Biomedical Research Centre

Funding Body Type

Private sector organisation

Funding Body Subtype

Research institutes and centers

Location

United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan

Restrictions apply to the availability of some or all data generated or analyzed during this study to preserve patient confidentiality. The team will on request detail the restrictions and any conditions under which access to some data may be provided. Please contact Prof. Waljit Dhillon (w.dhillon@imperial.ac.uk). The data will only become available once the study has been completed and will be at the discretion of the PI. Most data will not be available due to participant confidentiality.

IPD sharing plan summary

Other

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		10/04/2025	22/08/2025	Yes	No
HRA research summary			28/06/2023	No	No
Participant information sheet	version 5	27/01/2020	09/03/2022	No	Yes