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Does a lipid formulation increase the absorption of cannabidiol?

Submission date	Recruitment status	[X] Prospectively registered
09/09/2021	No longer recruiting	[ ] Protocol
Registration date	**Overall study status**	[ ] Statistical analysis plan
30/09/2021	Completed	[ ] Results
Last Edited	**Condition category**	[ ] Individual participant data
04/01/2023	Other	[ ] Record updated in last year

Plain English summary of protocol

Background and study aims
Cannabidiol (CBD) is an approved treatment for epilepsy and could be an effective treatment for psychosis, anxiety and addictions. It has poor oral bioavailability (around 5-10% in the fasted state) which can increase by up to 5 times with food. As a result, patients must carefully schedule their medication according to mealtimes. One way to improve the bioavailability and reduce the food effect is by using a lipid encapsulation.

The CBD formulation used in this study includes a range of fats that improve absorption . The lipids are all EU approved and have been used in medicinal products before.

This study will compare the pharmacokinetics (absorption, clearance etc) of this novel lipid formulation of CBD with a standard formulation. It will use a dose of 1000mg as this is the dose that is effective in patients with schizophrenia.

Who can participate?
Healthy volunteers aged 18 - 45 years

What does the study involve?
Each participant will attend for two experiments where they will be administered one of the two drugs, in a randomised order. They will then provide blood samples over the following 48 hours. The risks associated with taking part are minimal. Participants will be reimbursed for their time.

What are the possible benefits and risks of participating?
Participants will be reimbursed for their time.
The risks associated with taking part are minimal.

Where is the study run from?
King's College London (UK)

When is the study starting and how long is it expected to run for?
August 2020 to September 2022

Who is funding the study?
National Institute for Health Research (NIHR) (UK).

Who is the main contact?
Dr Edward Chesney, edward.chesney@kcl.ac.uk

Contact information

Type(s)
Public

Contact name
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Additional identifiers

Clinical Trials Information System (CTIS)
2020-004551-33

Integrated Research Application System (IRAS)
288415

ClinicalTrials.gov (NCT)
NCT05032807

Protocol serial number
IRAS 288415

Study information

Scientific Title
Pharmacokinetic study of a novel lipid formulation of cannabidiol (CBD) compared to a standard formulation

Acronym
CLIP

Study objectives

The novel formulation will increase the AUCinf for a single dose of oral CBD in the fasting state.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 11/04/2022, Brent Research Ethics Committee (Skipton House, 80 London Road, London SE1 6LH; +44 (0)20 7104 8128; brent.rec@hra.nhs.uk), ref: 22/LO/0047

Study design
Single-centre double-blind two-period crossover pharmacokinetic study

Primary study design
Interventional

Study type(s)
Other

Health condition(s) or problem(s) studied
Pharmacokinetics of a novel CBD formulation in healthy participants

Interventions
Participants are randomised by computer to receive oral administration of a single dose of either cannabidiol novel formulation 1000mg or cannabidiol standard formulation 1000mg. Followed by blood sampling over 48 hours.
At a second appointment, the participant will receive the opposite intervention. There will be a minimum of 2 weeks between appointments.

Intervention Type
Drug

Phase
Phase I

Drug/device/biological/vaccine name(s)
Cannabidiol novel formulation, cannabidiol standard formulation

Primary outcome(s)
AUCinf in the fasting state measured using high-performance liquid chromatography/mass spectrometry of blood samples taken over 48 hours

Key secondary outcome(s))
Measured using high-performance liquid chromatography/mass spectrometry of blood samples taken over 48 hours:
1. Maximum plasma concentration (Cmax)
2. Time after administration of drug when maximum plasma concentration is reached (Tmax)
3. Plasma half-life (t½)
4. Area under the concentration-time curve from time zero to 48hours (AUC0-48)

Completion date
01/09/2022

Eligibility

Key inclusion criteria
Current inclusion criteria as of 13/04/2022:
1. Healthy volunteers. Defined as healthy on the basis of a clinical history, physical examination, ECG, vital signs, and laboratory tests of blood and urine.
2. Aged 18-45 years
3. Agree to fast 15 hours, i.e. 10 pm to 1 pm on dosing days
4. Capable of giving informed consent
5. Written informed consent from participant

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Previous inclusion criteria:
1. Healthy volunteers
2. Age 18-45 years
3. Females of childbearing potential and males must be willing to use highly effective method of contraception (hormonal or barrier method of birth control; abstinence) throughout the duration of the study and for at least 4 weeks after
4. Agreeing to fast 15 hours; 10pm-1pm on dosing days
5. Capable of giving informed consent
6. Written informed consent from participant

Participant type(s)
Healthy volunteer

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 years

Upper age limit
45 years

Sex
All

Total final enrolment
14

Key exclusion criteria
Current exclusion criteria as of 13/04/2022:
1. Clinically relevant medical history, physical findings, ECG, or laboratory values at the pre-trial screening assessment that could interfere with the objectives of the trial or the safety of the participant

2. Presence of acute or chronic illness or history of chronic illness sufficient to invalidate the volunteer's participation in the trial or make it unnecessarily hazardous
3. Impaired endocrine, thyroid, hepatic, respiratory or renal function, diabetes mellitus, coronary heart disease, or history of any neurological or mental illness
4. Surgery or medical condition that might affect absorption of medicines
5. Blood pressure and heart rate in supine position at the screening examination outside the following ranges. Repeat measurements are permitted if values are borderline (i.e. values that are within 5 mm Hg for blood pressure or 5 beats/min for heart rate) or if requested by the investigator. Subjects can be included if the repeat value is within range or still borderline but deemed not clinically significant by the investigator.
5.1. Blood pressure 90–140 mm Hg systolic, 40–90 mm Hg diastolic
5.2. Heart rate 40–100 beats/min
6. Loss of more than 400 ml blood during the 3 months before the trial, e.g. as a blood donor
7. Any prescribed medication (apart from contraceptives)
8. Use of any CBD products within 6 months of IMP administration
9. Use of any over-the-counter medications or health supplements within the past 2 weeks
10. BMI <18 or >30 kg/m2
11. History of alcohol or substance misuse disorder
12. Intake of more than 14 units of alcohol weekly.
13. Smokes more than 10 cigarettes per day
14. Use of any illicit substances within the last 6 months
15. Pregnant or breastfeeding
16. Women of childbearing potential (as defined in CTFG guidelines, see 5.7 Concomitant Medication) not willing to use a highly effective form of contraception (as defined in CTFG guidelines, see section 5.7 Concomitant Medication) during participation in the study or male patients not willing to ensure use of a condom during participation in the study
17. eGFR ≤70 ml/min
18. Any liver function or renal function test abnormality. A repeat is allowed on one occasion for determination of eligibility.
19. Urine drug screen positive for any substances
20. Positive alcohol breath test
21. Participant in any other clinical trial or experimental drug study in the past 3 months
22. Known hypersensitivity to CBD and/or SEEK formulation excipients
23. Not able to swallow capsules

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Previous exclusion criteria:
1. Any prescribed medication (apart from contraceptives)
2. Use of any CBD products within six months of IMP administration
3. Use of any over-the-counter medications or health supplements within the past 2 weeks
4. BMI <18 or >30.0 kg/m²
5. History of alcohol or substance misuse disorder
6. Smokes more than 10 cigarettes per day
7. Use of any illicit substances within the last six months
8. Pregnant or breastfeeding
9. eGFR ≤70 mls/min
10. Any liver function or renal function test abnormality
11. Urine drug screen positive for any substances

Date of first enrolment
20/04/2022

Date of final enrolment
01/08/2022

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
King's College London
Institute of Psychiatry, Psychology & Neuroscience (IoPPN)
16 De Crespigny Park
London
United Kingdom
SE5 8AF

Sponsor information

Organisation
King's College London

ROR
https://ror.org/0220mzb33

Funder(s)

Funder type
Government

Funder Name
National Institute for Health Research

Alternative Name(s)
National Institute for Health Research, NIHR Research, NIHRresearch, NIHR - National Institute for Health Research, NIHR (The National Institute for Health and Care Research), NIHR

Funding Body Type
Government organisation

Funding Body Subtype

National government

Location
United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan
The current data sharing plans for this study are unknown and will be available at a later date.

IPD sharing plan summary
Data sharing statement to be made available at a later date

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
HRA research summary			28/06/2023	No	No
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes