ISRCTN98553810 https://doi.org/10.1186/ISRCTN98553810

A Phase I study to investigate KH-001 in healthy males

Submission date	Recruitment status	[_] Prospectively registered
24/11/2023	No longer recruiting	[_] Protocol
Registration date	**Overall study status**	[_] Statistical analysis plan
27/11/2023	Deferred	[X] Results
Last Edited	**Condition category**	[_] Individual participant data
23/07/2026	Other	

Plain English summary of protocol

Background and study aims
The purpose of this study was to investigate the study drug KH-001 besylate. This study was split into three parts. The overall objectives of this study were to determine the safety, tolerability (degree to which side effects of a drug can be tolerated) and concentration in the blood and urine of the study drug when evaluated in different conditions i.e., different dose strengths, following administration of single and multiple doses (SAD and MAD) and administration of the drug in a different form (Formulation Effect). The study also aimed to evaluate the effect of the study drug on the body, particularly assessing the effect of the drug on overall mood state, including suicidal behaviour.

Who can participate?
The study consisted of 82 participants across the three parts of the study which were undertaken; 56 within the SAD, 18 within the MAD and 8 in the formulation effect study. Participants were healthy adult males aged between 18 and 64.

What does the study involve?
The SAD consisted of a screening visit (between 28 and 2 days prior to first dose), one treatment period (consisting of 3 days with 2 overnight stays) and a post-study follow-up visit 5-7 days after the last dose of KH-001 besylate.

The MAD of the study consisted of a screening visit (between 28 and 2 days prior to first dose), one treatment period (consisting of 7 days with 6 overnight stays) and a post-study follow-up visit 5-7 days after the last dose of KH-001 besylate.

The Formulation Effect consisted of one group of 8 participants, with all participants required to complete both treatment periods. Across the treatment periods, each participant received a single dose of KH-001 besylate as an ODT at two different dose strengths in a fixed sequence. This part of the study consisted of a screening visit (between 28 and 2 days prior to first dose), two treatment periods (consisting of 3 days with 2 overnight stays) and a post-study follow-up visit 5-7 days after the last dose of KH-001 besylate. Each dose in each treatment period was separated by a washout period of at least 7 days.

Blood and urine samples were taken at set time points throughout each part of the study in order to measure the concentration of KH-001 in the blood and urine (as applicable). The results from each of the groups and each study part have been analysed and combined in order to better understand how KH-001 works in the body following assessment of different factors within each study part i.e., single and multiple doses, different dose strengths and different dose forms.

What are the possible benefits and risks of participating?
Taking part in this study was not expected to provide participants with any direct medical benefit. However, the information from this study may help improve the treatment of premature ejaculation.

Possible risks included the following:

Blood Sampling: The procedure for blood collection either by direct venepuncture or indwelling cannula may have caused mild pain and bruising at the collection site. Placement of an indwelling catheter was proposed in order to minimise these effects for rapid PK sampling. Very rarely, a blockage of a vein or a small nerve injury can occur, resulting in numbness and pain. If this occurs, it will resolve with time.

Blood pressure and pulse rate: The participants blood pressure and pulse were measured using an inflatable cuff which will be placed on the arm. Participants may have experienced mild discomfort in the arm whilst the cuff was inflated.

ECG: Small sticky pads were placed on the participants' upper body before the ECG and an ECG machine measured the electrical activity of the participants' heart. Before the pads were applied, the skin was cleaned. Trained staff may have needed to shave/clip small patches of the participants hair in these areas. Like Elastoplast® these sticky pads may be uncomfortable to remove.

COVID-19 Risks: Participants were also made aware of the risks of exposure to COVID-19. When participants attended the clinical unit at each visit, they may have been asked to complete a self-declaration form and temperature check to confirm that they were not showing any early signs of COVID-19 infection and that they had not had any contact with individuals who were currently self-isolating or had tested positive (dependent on risk mitigation measures employed at the clinical unit at the time of clinical conduct).

Participants may have also been required to have a negative COVID-19 test prior to admission to the clinical unit for any overnight stays as defined within the study protocol. This procedure may have caused some mild discomfort in the nose or throat when the swab was being taken but this should have resolved after the procedure had been completed. Additionally, at the clinical unit, participants may have been asked to wear a facemask during procedures where clinical staff could not maintain a 2 m distance. It is noted that if participants had a medical exemption from wearing a face mask, they would not be required to do so. In any circumstance, to prevent risk of transmission between staff and participants, all staff were wearing appropriate personal protective equipment i.e., face masks, face shields etc during the course of the study.

Harm to the unborn child: The treatment might harm the unborn child; therefore, no female participants (regardless of childbearing status) were eligible to take part in this study. For male participants (of childbearing potential), they were required to use a highly effective or 2

effective methods of contraception (including a condom) with their partner (of childbearing potential) from the point of the first dose of KH-001 besylate until at least 3 months following the last dose of KH-001 besylate.

Throughout the study the health of the participants was regularly monitored and appropriate treatment for any medical condition was provided if required. All doctors employed by Simbec-Orion are trained and certified in Advanced Life Support Procedures in order to deal with a medical emergency. Nurses and other clinical staff are also trained in emergency procedures. Simbec-Orion
also has an agreement with Prince Charles Hospital for referral of participants if required following a medical emergency.

Where is the study run from?
The study was conducted at Simbec-Orion Clinical Pharmacology Unit, an MHRA Phase I accredited CRO based in South Wales.

When is the study starting and how long is it expected to run for?
The study commenced in November 2023 and completed in August 2025.

Who is funding the study?
This study was funded and sponsored by Kanna Health Ltd (trading as Kadence Bio) based and headquartered in the United Kingdom.

Who is the main contact?
Hans-Jürgen Gruss, Kanna Health Ltd

Contact information

Type(s)
Public, Scientific

Contact name
Dr Hans-Jürgen Gruss

Contact details
Kanna Health Limited, 1st Floor, One Suffolk Way, Sevenoaks
Kent
United Kingdom
TN13 1YL
+44 (0)7899 944 082
hans-juergen@kadencebio.com

Type(s)
Principal investigator

Contact name
Dr Annelize Koch

Contact details
Simbec-Orion Clinical Pharmacology, Merthyr Tydfil Industrial Park, Cardiff Road
Merthyr Tydfil

United Kingdom
CF48 4DR
+44 1443 694313
annelize.koch@simbecorion.com

Additional identifiers

Clinical Trials Information System (CTIS)
2023-000058-83

Integrated Research Application System (IRAS)
1007122

Protocol serial number
KH-001-01-01

Study information

Scientific Title
A phase I, randomised, double-blind, placebo-controlled first in human study to assess the safety and pharmacokinetics of KH-001 Besylate in healthy male subjects

Study objectives
The primary objective of this study was:
1. To investigate the safety and tolerability of KH-001 besylate in healthy male participants

The secondary objectives of this study were:
1. To evaluate the pharmacokinetics (PK) profile of parent drug (KH-001 besylate) and metabolites (M-4, KH160 and KH-161) in healthy male participants after the administration of single ascending (SAD) and multiple ascending doses (MAD)
2. To evaluate the effects of KH-001 besylate on suicidality risk and mood states in healthy male participants
3. To evaluate the PK, taste and dissolution time of the new orodispersible tablet (ODT) KH-001 besylate formulation and compare to previous oral solution results with holding in the mouth application
4. To assess tolerability by a brief visual examination of oral cavity, Oral Cavity Index and irritation

Ethics approval required
Ethics approval required

Ethics approval(s)
1. Approved 22/09/2023, Wales Research Ethics Committee 2 (Health and Care Research Wales, Castlebridge 4, 15-19 Cowbridge Road East, Cardiff, CF11 9AB, United Kingdom; +44 2922 941119; Wales.REC2@wales.nhs.uk), ref: 23/WA/0040

2. Approved 23/10/2023, MHRA (10 South Colonnade, Canary Wharf, London, E14 4PU, United Kingdom; +44 (0) 20 3080 6000; info@mhra.gov.uk), ref: CTA 56572/0001/001-0001

Primary study design

Interventional

Study design
A first in human trial in healthy male participants

Study type(s)
Safety, Other

Health condition(s) or problem(s) studied
Healthy volunteers

Interventions
This was a Phase I, first in human, randomised, double-blind, placebo-controlled study to assess the safety, tolerability, and PK of KH-001 besylate following single ascending (SAD) and multiple ascending (MAD) doses in healthy male participants.

The study included the following additional evaluation:

Formulation Effect: non-randomised open–label fixed-sequence crossover evaluation of safety, tolerability, PK, taste, dissolution time and formulation effect after an ODT dose in each period, comparing the oral formulation versus an ODT formulation.

The SAD was conducted in fifty-six (56) participants (4 cohorts of eight (8) participants, with 3 additional cohorts of 8 participants). Each cohort consisted of eight (8) participants randomised (3:1) to receive KH-001 besylate or placebo. Participants received one dose of KH-001 besylate (or placebo) in a fasted state.

Participants underwent a screening period (Day -28 to Day -2), an in-house treatment period consisting of 2 overnight stays (Day -1 to Day 2) and a follow-up visit on Day 6 to 8 (5-7 days post final dose administration on Day 1).
The MAD was conducted in eighteen (18) participants (2 cohorts of 9 participants). Each cohort consisted of nine (9) participants randomised (2:1) to receive KH-001 besylate or placebo. Participants received KH-001 besylate (or placebo) once daily for 5 consecutive days.

Participants underwent a screening period (Day -28 to Day -2), an in-house treatment period consisting of 6 overnight stays (Day -1 to Day 6) and a follow-up visit on Day 10-12 (5-7 days post final dose administration on Day 5).

The Formulation Effect was conducted in 8 participants across two dose periods. This part was an open-label, fixed-sequence crossover study evaluating the safety, tolerability, PK, taste, dissolution time and formulation effect after an ODT dose of KH-001 besylate in each period and comparing the oral solution formulation versus the ODT formulation.

Participants underwent a screening period (Day -28 to Day -2), two in-house treatment periods, each consisting of 2 overnight stays (Day -1 to Day 2), and each separated by a washout period of 7 days between administrations. A follow-up visit was performed 5-7 days post final dose administration in Treatment Period 2.

Intervention Type
Drug

Phase
Phase I

Drug/device/biological/vaccine name(s)
SAD and MAD: KH-001 besylate oral solution Formulation Effect: KH-001 Orodispersible Tablets (ODT)

Primary outcome(s)
The primary endpoints for this study were safety endpoints and were defined as follows:

- Adverse Events
- Laboratory safety (biochemistry, haematology, coagulation and urinalysis)
- Vital signs (systolic/diastolic blood pressure, heart rate, respiration rate, and oral temperature)
- 12 lead ECG (heart rate, RR interval, PR interval, QRS width, QT interval, and QTcF interval)

Timepoints for Assessment were as follows:
Adverse Events
AEs were recorded from the point of informed consent up to final post-study follow up visit.
Laboratory Safety Testing
SAD and Formulation Effect: Screening, Day -1, Day 2 (of each treatment period), and post study
MAD: Screening, Day -1, Day 2, Day 4, Day 6 and post study
Vital Signs
SAD and Formulation Effect: Screening, Day -1, Day 1 (5 timepoints up to 24 hr post-dose of each treatment period), and post study
MAD: Screening, Day -1, Day 1 and Day 5 (4 timepoints up to 24 hr post-dose), Days 3-4 (pre-dose) and post study
12-Lead ECG
SAD and Formulation Effect: Screening, Day 1 (4 timepoints up to 24 hr post-dose of each treatment period), and post study
MAD: Screening, Day 1 and Day 5 (4 timepoints up to 24 hr post-dose), Day 4 (pre-dose) and post study

Key secondary outcome(s)
The secondary endpoints for this study were pharmacokinetic parameters derived from analysis of plasma samples for concentrations of KH-001.

Endpoints were defined as follows:
SAD: Plasma PK parameters included AUC0-t, Cmax and Tmax
MAD: Day 1: Plasma PK parameters included AUC0-τ, Cmax and Tmax
- Day 5: Plasma PK parameters included AUC0-t, Cmax, and Tmax
Formulation Effect: PK parameters included AUC0-t, Cmax and Tmax

Timepoints for Assessment were as follows:
Plasma PK Sampling:
Parts A & D: Day 1 (17 timepoints from pre-dose to 24 hours post-dose), each treatment period
Part B: Days 1 and 5 (13 timepoints from pre-dose to 12 hours post-dose), Day 2-4 (5 timepoints from pre-dose to 8 hours post-dose) and Day 6

Completion date
22/08/2025

Eligibility

Key inclusion criteria
1. Healthy male between 18 and 64 years of age, inclusive
2. For male participants with a female partner of childbearing potential, the contraception requirements for participation required the use of a condom by the male in addition to either one other highly effective method of contraception, or one other effective method of contraception by the female partner, if applicable from first dose until 3 months after last dose
3. Body mass index (BMI) of 18-30 kg/m²
4. No clinically significant history of previous allergy / sensitivity to the investigational medicinal product (IMP) or any of the excipients contained within the IMP(s)
5. No clinically significant abnormal test results for serum biochemistry, haematology and/or urine analyses within 28 days before the first dose administration of the IMP
6. Negative urinary drugs of abuse (DOA) screen (including alcohol) test results, determined within 28 days before the first dose administration of the IMP
7. Negative human immunodeficiency virus (HIV), hepatitis B surface antigen (HbsAg)) and hepatitis C virus antibody (HCV Ab) test results at Screening
8. No clinically significant abnormalities in 12-lead electrocardiogram (ECG) determined within 28 days before first dose of IMP including a PR interval > 220ms, QT interval corrected using Fredericia's formula QTcF > 450ms
9. No clinically significant abnormalities in vital signs (blood pressure/heart rate, respiratory rate, oral temperature) determined within 28 days before first dose of IMP
10. Available to complete the study (including all follow-up visits)
11. Satisfied an Investigator about participant fitness to participate in the study
12. Provided written informed consent to participate in the study

Participant type(s)
Healthy volunteer

Healthy volunteers allowed
Yes

Age group
Adult

Lower age limit
18 Years

Upper age limit
64 Years

Sex
Male

Total final enrolment
82

Key exclusion criteria
1. A clinically significant history of gastrointestinal disorder likely to influence IMP absorption
2. Allergic reaction to the IMP or history of reaction to relevant supplements

3. Use of prescription or non-prescription drugs, including vitamins, herbal and dietary supplements within 28 days or 5 half-lives (whichever is longer) prior to the first dose of IMP
4. Evidence of any clinically significant history or the presence of renal, hepatic, respiratory, cardiovascular (hypertension, unstable angina, arrhythmia, QT prolongation, etc), metabolic dysfunction, haematological, lymphatic or neurological diseases
5. Disorders of the central nervous system, psychiatric disorders, behavioural disturbances (e.g., cerebrovascular events, depression, post-traumatic stress disorder [PTSD], anxiety, bipolar disorder, severe migraine, Parkinson's disease)
6. History of narrow angle glaucoma
7. Have had a tattoo or piercing in the 3 months prior to Screening
8. Reported having experienced suicidal ideation (Type 4 or 5 on the Columbia-Suicide Severity Rating Scale [C-SSRS]) within 28 days prior to Screening, any suicidal behaviour within 2 years prior to Screening (Any "Yes" answers on Suicidal Behaviour section of C-SSRS), and/or the Investigator assessed the participant to be a safety risk to him/herself or others
9. Past history of prostate cancer, benign prostatic hyperplasia (BPH) or other clinically significant prostate disease
10. Concomitant disease or condition that could have interfered with, or treatment which may have interfered with, the conduct of the study, or that would, in the opinion of the investigator, have posed an unacceptable risk to the participant in this study
11. Concomitant use of CNS medications (including anti-depressants, anti-psychotics), tramadol, topical anaesthetics, phosphodiesterase 5 (PDE5) inhibitors or vasoactive penile injection therapy
12. A clinically significant current or history of drug or alcohol abuse (defined as the consumption of more than 14 units [for male participants] of alcohol a week) within the past two years
13. Inability to communicate well with the Investigators (i.e., language problem, poor mental development or impaired cerebral function)
14. Participation in a New Chemical Entity (NCE) clinical study within the previous 3 months or five half-lives, whichever is longer, or a marketed drug clinical study within the 30 days or five half-lives, whichever is longer, before the first dose of IMP. (Washout period between studies is defined as the period of time elapsed between the last dose of the previous study and the first dose of the next study)
15. Donation of 450 mL or more blood within the 3 months before the first dose of IMP
16. Vegans, vegetarians or other dietary restrictions (e.g., restrictions for medical, religious or cultural reasons, etc). Participants who preferred vegetarian options can be included if willing to follow available clinic meal options and all study procedures
17. Users of nicotine products i.e., current smokers or ex-smokers who have smoked within the 6 months prior to Screening or users of cigarette replacements (i.e., e-cigarettes, nicotine patches or gums)
18. Participants who received a COVID-19 vaccine injection within 28 days prior to the first dose of IMP
19. Participants with pregnant or breastfeeding partners
20. Clinically significant maxillofacial pathology, tongue piercings in the 3 months prior to Screening (Formulation Effect only)

Date of first enrolment
14/11/2023

Date of final enrolment
22/08/2025

Locations

Countries of recruitment
United Kingdom

Wales

Study participating centre
Simbec Research Limited
Simbec House Merthyr Tydfil Industrial Park
Merthyr Tydfil Industrial Park
Pentrebach
Merthyr Tydfil
Mid Glamorgan
Wales
CF48 4DR

Sponsor information

Organisation
Kanna Health Ltd (trading as Kadence Bio)

Funder(s)

Funder type
Industry

Funder Name
Kanna Health Ltd (trading as Kadence Bio)

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Not expected to be made available

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?

Basic results	version 1.0	22/07/2026	23/07/2026	No	No