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A study to evaluate the safety, tolerability, pharmacokinetics, and pharmacodynamics of BCX10013 in healthy participants

Submission date 26/02/2025	**Recruitment status** No longer recruiting	[_] Prospectively registered [_] Protocol [_] Statistical analysis plan [X] Results [_] Individual participant data
Registration date 26/03/2025	**Overall study status** Completed	
Last Edited 30/07/2025	**Condition category** Other	

Plain English summary of protocol

Background and study aims
BCX10013 is an oral medicine that is being tested in humans for the first time. BCX10013 is a small-molecule inhibitor that specifically targets human complement Factor D (a type of protein). BCX10013 works by blocking the activation of the alternative pathway of complement, a part of the body's immune system that helps fight infection and clear damaged cells. This study aims to test the safety and acceptability of BCX10013 after single and multiple doses in healthy participants.

Who can participate?
Healthy males and females, aged between 18 and 55 years

What does the study involve?
People will be screened to check if they can participate in the study (approximately 28 days before the start of the treatment).

The study will be conducted in 4 parts:

Part 1:
Groups 1 to 6, 8, and 9: Participants will receive a single oral dose of BCX10013 or a matching placebo on Day 1 of Part 1 in increasing dose groups.
Group 7: Participants will receive a single oral dose of BCX10013 or placebo on Day 1 of Period 1 in fasting conditions and will receive the same dose in Period 1 on Day 1 of Period 2 post a high-fat meal.

Part 2:
Groups 1,2,3,4 and 5: Participants will receive several oral doses of BCX10013 or a matching placebo from Day 1 and up to 7 days (Group 1), 14 days (Groups 2 and 3), and 28 days (Groups 4 and 5).

Part 3:
Group 1: Participants will receive either one oral dose of BCX10013 or a matching placebo on Day 1.
Group 2: Participants will receive several oral doses of BCX10013 or a matching placebo on Day 1, up to 28 days.

Part 4:
Participants will enter a two-period crossover study (a study with two phases, where participants change groups halfway through). They will receive 2 single oral doses of BCX10013 in a random order (either AB or BA). On Day 1 of Period 1, participants will receive one oral dose according to their assigned order. After a 7-day gap, they will receive the other assigned order on Day 1 of Period 2.

What are the possible benefits and risks of participating?
Participants will not receive any benefit from participating in this study, other than getting the Neisseria meningitidis vaccine. However, the information learned from this study may be useful to treat future patients.

It may not be fully known at the time of the study how safe and how well the study treatment works. People interested in taking part will be informed about the risks and benefits, as well as any additional procedures or tests they may need to undergo. All details of the study will be described in an informed consent document. This includes information about possible effects and other options for treatment.

Participants may have unwanted effects of the drug used in this study. Possible unwanted effects include: severe medicine reactions, bacterial infections, kidney diseases, abnormal liver tests, a decrease in the number of blood cells and disease in glands.

Where is the study run from?
United Kingdom and Netherlands

When is the study starting and how long is it expected to run for?
June 2021 to October 2023

Who is funding the study?
BioCryst Pharmaceuticals (Durham, NC)

Contact information

Type(s)
Public, Scientific, Principal investigator

Contact name
Dr Data Disclosure -

Contact details
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Additional identifiers

Clinical Trials Information System (CTIS)
2021-002628-19

Integrated Research Application System (IRAS)
300091

Protocol serial number
BCX10013-101

Study information

Scientific Title
A phase 1 first-in-human study to evaluate the safety, tolerability, pharmacokinetics, and pharmacodynamics of single and multiple doses of BCX10013 in healthy subjects

Study objectives
The purpose of this study is to evaluate the safety, tolerability, pharmacokinetics and pharmacodynamics of single and multiple doses of BCX10013 in healthy participants to enable further clinical development.

Ethics approval required
Ethics approval required

Ethics approval(s)
1. Approved 10/06/2021, Wales Research Ethics Committee 2 Cardiff (Health and Care Research Wales, Castlebridge 4 15-19 Cowbridge Road East, Cardiff, CF11 9AB, United Kingdom; +44 (0) 2922941119; Wales.REC2@wales.nhs.uk), ref: 21/WA/0192

2. Approved 18/11/2022, Stichting Beoordeling Ethiek Biomedisch Onderzoek (Stichting BEBO) (Weiersstraat, Assen, 1C 9401 ET, Netherlands; +31 0592-405871; info@stbebo.nl), ref: NL82735.056.22

Primary study design
Interventional

Study design
Multicenter interventional randomized placebo-controlled trial

Study type(s)
Treatment

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

Interventions
Healthy participants are planned to be enrolled in this study. Participants will be randomised using a computer-generated randomisation schedule.

Part 1: Single Ascending Dose and Pilot Food Effect
Participants will be enrolled on 1 of 9 randomised cohorts.
Cohorts 1 to 6, 8 and 9 will receive a single oral dose of BCX10013 or a matching placebo on Day 1 of Part 1 in sequential ascending dose cohorts.
Cohort 7 will receive a single oral dose of BCX10013 or placebo on Day 1 of Period 1 under fasted conditions. After a washout period of at least 7 days, participants will receive BCX10013 or a placebo on Day 1 of Period 2 following a high-fat meal.

Part 2: Multiple Ascending Dose
Participants will be enrolled into 1 of 5 randomised sequential ascending dose cohorts to receive multiple oral doses of BCX10013 or a matching placebo on Day 1 of Part 2 for up to 7 days (Cohort 1), 14 days (Cohorts 2 and 3), and 28 days (Cohorts 4 and 5).

Part 3: Japanese Ethnobridging
Japanese participants will be enrolled into 1 of 2 randomised cohorts.
Cohort 1 will receive a single oral dose of BCX10013 or a matching placebo on Day 1.
Cohort 2 will receive multiple oral doses of BCX10013 or a matching placebo on Day 1, for up to 28 consecutive days.

Part 4: Relative Bioavailability
Participants will be enrolled in a two-period crossover cohort. Participants will receive 2 single oral doses of BCX10013 across 2 periods in randomised sequence (AB or BA). A single oral dose of the assigned regimen will be administered on Day 1 of Period 1. After a washout period of 7 days, participants will receive the assigned regimen on Day 1 of Period 2.

Intervention Type
Drug

Phase
Phase I

Drug/device/biological/vaccine name(s)
BCX10013

Primary outcome(s)
1. Parts 1 and 4: The number of participants with treatment-emergent adverse events (TEAEs) measured using case reports from day 1 up to day 18
2. Part 2: The number of participants with TEAEs measured using case reports from day 1 up to day 45
3. Parts 1 and 4: Change from baseline (day 1) in vital signs and physical examination (blood pressure, temperature, heart rate, height, weight and body mass index [BMI]) will be measured manually or using an automatic blood pressure monitor up to day 18
4. Part 2: Change from baseline (day 1) in vital signs and physical examination (blood pressure, temperature, heart rate, height, weight and BMI) will be measured manually or using an automatic blood pressure monitor up to day 45
5. Parts 1 and 4: The number of participants with abnormality in bedside 12-lead electrocardiogram (ECG) parameters using a standard bedside 12-lead ECG machine from day 1

up to day 18
6. Part 2: The number of participants with abnormality in bedside 12-lead ECG parameters using a standard bedside 12-lead ECG machine from day 1 up to day 45
7. Parts 1 and 4: The number of participants with abnormality in clinical laboratory parameters (hematology, urinalysis and coagulation) using blood and urine samples from day 1 up to day 18
8. Part 2: The number of participants with abnormality in clinical laboratory parameters (hematology, urinalysis and coagulation) using blood and urine samples from day 1 up to day 45

Key secondary outcome(s)
1. Part 3 (Japanese participants): Number of participants with TEAEs from day 1 up to day 45
2. Part 3 (Japanese participants): Change from baseline in vital signs and physical examination (blood pressure, temperature, heart rate, height, weight and BMI) will be measured manually or using an automatic blood pressure monitor up to day 45
3. Part 3 (Japanese participants): Number of participants with abnormality in bedside 12-lead ECG parameters using a standard bedside 12-lead ECG machine from day 1 up to day 45
4. Part 3 (Japanese participants): Number of participants with abnormality in clinical laboratory parameters (hematology, urinalysis and coagulation) using blood and urine samples from day 1 up to day 45
5. Parts 1 to 4: Pharmacokinetic (PK) parameters for BCX10013 and its metabolite BCX13741 will be evaluated by noncompartmental analysis using blood and urine samples collected at pre-dose and at multiple time points, up to day 31
6. Parts 1 and 2 and Part 3 cohort 1: Dose proportionality for PK parameters of BCX10013 and its metabolite BCX13741 will be assessed by a power model using blood samples collected at pre-dose and at multiple time points, up to day 31
7. Parts 1 to 4: Effect of BCX10013 on pharmacodynamic (PD) and biomarkers will be evaluated as change over time in PD biomarkers using blood and urine samples at pre-dose and at multiple timepoints, up to day 31

Completion date
09/10/2023

Eligibility

Key inclusion criteria
1. Able to provide written, informed consent.
2. Healthy male and non-pregnant, non-lactating female participants aged 18 to 55 years.
3. Body mass index (BMI) between 18 and 32 kilogram per meter square (kg/m2), inclusive.
4. Estimated glomerular filtration rate (eGFR) of ≥ 80 milliliter per minute per 1.73 meter square (mL/min/1.73m2) as calculated by the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation.
5. Females of childbearing potential and males with female partners of childbearing potential must agree to use a highly effective contraceptive method, from screening until 30 days after discharge from the Clinical Research Unit (CRU)
6. In the opinion of the investigator, the participant is expected to adequately comply with all required study procedures and restrictions for the duration of the study.
7. Part 2 and Part 3 Cohort 2 only: must have adequate prophylaxis against Neisseria meningitidis infection.
8. Part 3 only: Japanese participants must be first generation: born in Japan; not having lived outside Japan for more than 5 years; able to trace maternal and paternal Japanese ancestry; with no significant change in lifestyle since leaving Japan (at least one Japanese meal consumed per day).

Participant type(s)
Healthy volunteer

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 Years

Upper age limit
55 Years

Sex
All

Total final enrolment
135

Key exclusion criteria
1. Any clinically significant medical or psychiatric condition or medical history that, in the opinion of the investigator or sponsor, would interfere with the participant's ability to participate in the study or increase the risk of participation for that participant. Participants with Gilbert's syndrome and those who have had a cholecystectomy are not allowed.
2. Bacterial, viral, or fungal infection, or any other serious infection, with incompletely resolved signs and symptoms within 30 days prior to screening. This includes suspected or confirmed severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection, persistent or recurrent positive tests for SARS-CoV-2 nucleic acids or antigens, and persistent or recurrent fever or other symptoms or signs consistent with multisystem inflammatory syndrome in adults or any other post COVID-19 syndrome.
3. Clinically significant abnormal bedside ECG at screening. This includes but is not limited to a QTcF > 450 milliseconds (msec) in males or > 470 msec in females, a Pulse rate (PR) < 118 msec or > 204 msec, a Auricle diastole Auricular repolarization Ventricular depolarization Cardiac cycle (QRS) < 80 msec or >120 msec, or ventricular and/or atrial premature contractions that are more frequent than occasional, and/or as couplets or higher in grouping.
4. History of kidney-related diseases and disorders, including acute kidney injury.
5. History or current diagnosis of non-alcoholic steatohepatitis (NASH).
6. Any clinically significant history of a cardiovascular abnormality, including but not limited to angina, known coronary artery disease, myocardial infarction, syncope, clinically significant cardiac arrhythmias, left ventricular hypertrophy, cardiomyopathy, and aortic stenosis.
7. Known family history of sudden cardiac death in a first-degree relative.
8. History of or current implanted defibrillator or pacemaker.
9. Any laboratory parameter at screening and Day -1 that, in the opinion of the investigator or sponsor, is clinically significant and relevant for this study. This includes but is not limited to cholesterol (low-density lipoprotein, high-density lipoprotein, and total) or triglycerides > 1.5 × Upper limit of normal (ULN) at screening or Day -1 or creatine kinase > 1.5 × ULN on Day -1. Enrollment of a participant with laboratory value(s) minimally outside of the reference range may be permissible if the abnormality is documented by the investigator to not be of clinical

significance.
10. Aspartate transaminase (AST), Alanine aminotransferase (ALT), or total bilirubin value > ULN, obtained during screening or Day -1.
11. Use of any over-the-counter medications, prescribed medications, vitamins, or herbal products within 14 days prior to Day 1 (other than up to 2 grams per day paracetamol /acetaminophen, contraceptives, COVID-19 vaccines permitted by the protocol, and vaccines against N. meningitidis types A, C, W, Y, and B [Part 2 and Part 3 Cohort 2 only].
12. Participant has received a live attenuated vaccine (also applicable to COVID-19 vaccines that may become available during the conduct of the study) within 30 days prior to Day 1 or has received another type of vaccine within 14 days prior to Day 1, except vaccinations against N. meningitidis. COVID-19 vaccination with authorized or available vaccines is prohibited within 3 days prior to Day 1.
13. Use of a medication or herbal product that is clinically known to inhibit or induce metabolic enzymes or transporters within 30 days prior to Day 1.
14. Consumption of bergamottin-containing fruits and fruit juices (for example (eg,) Seville oranges, grapefruit, grapefruit juice, pomelos, marmalade) within 7 days prior to Day -1.
15. Consumption of poppy seeds or alcohol within 2 days prior to Day 1.
16. History of alcohol or drug abuse within 12 months prior to screening, or current evidence of substance dependence or abuse as self-reported regular alcohol consumption of > 21 units per week for males and of > 14 units per week for females (where a unit is defined as a half (½) pint [285 mL] of beer or 25 mL of a 40% spirit, and 1.5 units is equivalent to a 125 mL glass of wine).
17. Current smokers and those who have identified as smokers within 12 months prior to screening. This includes the use of cigarettes, e-cigarettes, and other nicotine-containing products.
18. Participation in unaccustomed strenuous exercise within 7 days prior to Day 1.
19. Positive urine cotinine test.
20. Positive drugs of abuse screen.
21. Positive serology for human immunodeficiency virus (HIV) or active infection with hepatitis B virus (HBV) or hepatitis C virus (HCV).
22. Part 2 and Part 3 Cohort 2 only: positive for colonization by N. meningitidis as assessed by the throat and nasal swab within 14 days prior to Day 1.
23. Part 2 and Part 3 Cohort 2 only: participants that have contraindications to vaccinations against N. meningitidis as per each of the local Summary of Product Characteristics documents (eg, hypersensitivity to the active substances or any of the vaccine excipients, of any degree) and are required to receive vaccination against N. meningitidis during the study.
24. Donation or loss of > 400 mL of blood within the 3 months prior to Day 1.
25. Recent history or currently diagnosed anemia or hemoglobin < lower limit of normal at screening or Day -1.
26. Participant has been dosed with any other investigational drug within 90 days prior to Day 1.
27. Known hypersensitivity to any component of the study drug.
28. History of severe hypersensitivity to any medicinal product, which was associated with swelling, severe rash requiring treatment/hospitalization, or anaphylaxis.
29. Lack of suitable veins for venipuncture/cannulation as assessed by the investigator at screening.
30. Employment by the study site, or an immediate family relationship to either study site employees or sponsor employee.

Date of first enrolment
23/08/2021

Date of final enrolment

25/08/2023

Locations

Countries of recruitment
United Kingdom

England

Netherlands

Study participating centre
Quotient Sciences
Mere Way, Ruddington
Nottingham
United Kingdom
NG11 6JS

Study participating centre
ICON
Van Swietenlaan 6
Groningen
Netherlands
9728 NZ

Sponsor information

Organisation
BioCryst Pharmaceuticals (United States)

ROR
https://ror.org/031mgj447

Funder(s)

Funder type
Industry

Funder Name
BioCryst

Alternative Name(s)
BioCryst Pharmaceuticals, BioCryst Pharmaceuticals, Inc.

Funding Body Type
Private sector organisation

Funding Body Subtype
For-profit companies (industry)

Location
United States of America

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated during and/or analysed during the current study are not expected to be made available due to participant-level data not being a regulatory requirement.

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			30/07/2025	No	No