ISRCTN15982148 https://doi.org/10.1186/ISRCTN15982148

The effect of ulinastatin on sepsis-related organ failure in children

Submission date
21/08/2024

Recruitment status
Recruiting

Registration date
29/08/2024

Overall study status
Ongoing

Last Edited
28/08/2024

Condition category
Infections and Infestations

[X] Prospectively registered
[X] Protocol
[_] Statistical analysis plan
[_] Results
[_] Individual participant data
[_] Record updated in last year

Plain English summary of protocol

Background and study aims
Sepsis is a serious medical condition that occurs when the body’s response to an infection causes widespread inflammation, which can lead to damage in various organs. One of the ways sepsis can become more severe is through damage to the blood vessels, which can cause multiple organs to fail, a condition known as Multiple Organ Dysfunction Syndrome (MODS). Previous research suggests that a medication called ulinastatin might help by improving blood flow in tiny blood vessels, protecting the lungs, liver, and kidneys from sepsis-related damage, and potentially preventing organ failure. However, the existing evidence is not strong enough to confirm these benefits. Therefore, this study aims to test whether ulinastatin can reduce the chances of organ failure in children with sepsis and improve their overall recovery.

Who can participate?
Children with age between 28 days and 18 years old and diagnosed with sepsis.

What does the study involve?
Children participating in this study will be randomly assigned to one of two groups. The first group will receive ulinastatin through an intravenous (IV) drip every 8 hours for 7 days. The dosage will be adjusted based on the child's weight but will not exceed a certain limit. The second group will receive an equal amount of normal saline (a harmless fluid often used in medical treatments) as a placebo. By comparing the outcomes of the two groups, the researchers hope to determine whether ulinastatin is effective in reducing organ failure in septic children.

What are the possible benefits and risks of participating?
The administration of ulinastatin is likely to reduce the incidence of organ injury in septic children. The main risks include the potential low incidence of mild allergic reactions.

Where is the study run from?
Children’s Hospital of Soochow University and takes place in 8 children's hospitals across China.

When is the study starting and how long is it expected to run for?
October 2023 to September 2026

Who is funding the study?
Guangdong Techpool Bio-pharma Co., Ltd. (China)

Who is the main contact?
1. Shuiyan Wu, doctor219@163.com
2. Prof. Zhenjiang Bai, 18913510429@163.com

Contact information

Type(s)
Public, Scientific, Principal investigator

Contact name
Prof Shuiyan Wu

ORCID ID
https://orcid.org/0000-0002-8963-5082

Contact details
No.92 Zhongnan Street, SIP
Suzhou
China
215000
+86 15195698308
doctor1219@163.com

Type(s)
Public, Scientific, Principal investigator

Contact name
Prof Zhenjiang Bai

ORCID ID
https://orcid.org/0000-0002-9404-7058

Contact details
No.92 Zhongnan street,SIP
Suzhou
China
215000
+86 18913510429
18913510429@163.com

Additional identifiers

Clinical Trials Information System (CTIS)
Nil known

ClinicalTrials.gov (NCT)
Nil known

Protocol serial number
Nil known

Study information

Scientific Title
The effect of ulinastatin on sepsis-related organ failure in children: a multicenter randomized controlled trial

Acronym
IMPROVING

Study objectives
Ulinastatin can reduce the incidence of sepsis-related organ failure and thus improve the prognosis of septic children

Ethics approval required
Ethics approval required

Ethics approval(s)
approved 09/08/2024, Medical Ethics Committee of the Children's Hospital of Soochow University (No.92 Zhongnan Street, SIP, Suzhou, 215000, China; +86 0512-80693506; sdfetyyec@163.com), ref: 2024018

Study design
Multicenter randomized controlled trial

Primary study design
Interventional

Study type(s)
Treatment, Efficacy

Health condition(s) or problem(s) studied
Sepsis

Interventions
After completing screening measurements and acquiring written informed consent, eligible participants will be randomized in a 1:1 ratio to either the Ulinastatin group or the control group through an Interactive Web Response System (IWRS). The randomization code was computer-generated with random block size (4, 6 or 8) to ensure that allocation concealment could not be violated by guessing the allocation sequence at the end of each block, and the randomization was stratified by sites. Due to the nature of the treatment, blinding will not be applicable. The trial statistician will be blinded to the treatment code when performing the statistical analysis.

Ulinastatin group: received ulinastatin (20,000 U/kg/d [divided into three eight-hourly doses and administrated one dose every 8-hour], maximum dose 300,000U for every 8-hour) through intravenous (IV) drip for 7 days.
Control group: received an equal amount of normal saline as a placebo.

Intervention Type
Drug

Phase
Phase III

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

Primary outcome(s)
Composite outcome of 28-day mortality and/or presence of at least one organ failure on day 7 after randomization (pSOFA ≥2 and/or Phoenix Sepsis Score≥2 for each organ system)

Key secondary outcome(s))
The following secondary outcomes were measured using patients' hospitalization records and laboratory indexes:
1. Thrombomodulin levels on randomization days 0, 1, 2 and 7
2. Length of ICU stay to day 28 after randomization
3. Days of survival without life-support interventions to day 28 after randomization
4. Cytokine levels on randomization days 0, 1, 2 and 7
5. pSOFA and/or Phoenix Sepsis Score scores on randomization days 0, 1, 2 and 7
6. Blood lactate levels on randomization days 0, 1, 2 and 7
7. WBC, CRP, PCT, LDH levels on randomization days 0, 1, 2 and 7
8. 24-hour fluid output and intake within the first 7 days of randomization
9. Cumulative use of steroids within the first 7 days of randomization (equivalent to methylprednisolone)

Completion date
30/09/2026

Eligibility

Key inclusion criteria
1. 28 days < age ≤ 18 years
2. There is clear evidence of infection
3. Meet diagnostic criteria for sepsis: infection + pSOFA and/or Phoenix Sepsis Score (PSS) ≥2

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Child

Lower age limit
28 days

Upper age limit

18 years

Sex
All

Key exclusion criteria
1. Received immunomodulatory therapy within 2 months before enrollment, such as Xuebijing and thymosin
2. Use of high-dose non-steroidal anti-inflammatory drugs within two days before enrollment; The daily dose of glucocorticoids > 5 mg/kg or greater than 500 mg/day within two days before enrollment
3. Palliative treatment without enough life support treatment
4. Receive ulinastatin treatment prior to enrollment
5. Previous history of allergy to ulinastatin or any of its components
6. Children with terminal disease

Date of first enrolment
01/10/2024

Date of final enrolment
02/09/2026

Locations

Countries of recruitment
China

Study participating centre
Children's Hospital of Soochow University
No.92 Zhongnan street, SIP
Suzhou
China
215000

Study participating centre
Xi'an Children's Hospital
No. 69, Xijuyuan Lane, Xi'an City, Shaanxi Province
Xi'an
China
710003

Study participating centre
Beijing Children's Hospital, Capital Medical University
No. 56 Nanlishi Road, Xicheng District, Beijing
Beijing

China
100045

Study participating centre
Chengdu Women and Children's Central Hospital
No. 1617, Riyue Avenue, Qingyang District, Chengdu
Chengdu
China
610073

Study participating centre
Anhui Provincial Children's Hospital
No. 39, Wangjiang East Road, Hefei City
Hefei
China
230051

Study participating centre
Gansu Provincial Central Hospital
No. 999 Mogao Avenue, Anning District, Lanzhou
Lanzhou
China
730050

Study participating centre
Children's Hospital of Chongqing Medical University
No. 136, Zhongshan 2nd Road, Yuzhong District, Chongqing
Chongqing
China
400014

Study participating centre
Children's Hospital of Nanjing Medical University
No. 72 Guangzhou Road, Nanjing
Nanjing
China
210008

Sponsor information

Organisation
Guangdong Techpool Bio-pharma Co., Ltd.

Funder(s)

Funder type
Industry

Funder Name
Guangdong Techpool Bio-pharma Co., Ltd

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated and/or analysed during the current study will be published as a supplement to the results publication.

IPD sharing plan summary
Published as a supplement to the results publication

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes
Protocol file			28/08/2024	No	No