

# Safety evaluation of low-level chlorine in water aerosol when inhaled by healthy volunteers

<b>Submission date</b> 03/12/2021	<b>Recruitment status</b> No longer recruiting	<input type="checkbox"/> Prospectively registered <input checked="" type="checkbox"/> Protocol
<b>Registration date</b> 15/12/2021	<b>Overall study status</b> Completed	<input type="checkbox"/> Statistical analysis plan <input type="checkbox"/> Results
<b>Last Edited</b> 15/12/2021	<b>Condition category</b> Respiratory	<input type="checkbox"/> Individual participant data <input type="checkbox"/> Record updated in last year

## Plain English summary of protocol

Background and study aims.

Human white blood cells produce aqueous (dissolved) chlorine that has been reproduced as HS4-20 and used to prevent wound infection and inflammation when administered to the skin and other surfaces. It is believed that this would be beneficial when administered to the airways and lungs to treat lung and airway diseases. The study is designed to discover if HS4-20 is safe to administer as an aerosol and breathe. The study is designed to begin at a short exposure of 30 seconds and, if safe to do so, increase exposure to 90 minutes over several days and in up to 18 healthy volunteers.

Who can participate?

Healthy volunteers

What does the study involve?

The participants breathe in aerosolised HS4-20 over several days and escalating from 30 seconds to 90 minutes.

What are the possible benefits and risks of participating?

There are no expected benefits. The possible risk of participation is increased expectoration (spitting) or mild coughing

Where is the study run from?

Hypo-Stream (UK)

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

May 2015 to September 2020.

Who is funding the study?

Hypo-Stream Ltd (UK)

Who is the main contact?

Myles Dakin

[myles.dakin@hypo-stream.com](mailto:myles.dakin@hypo-stream.com)

# Contact information

## Type(s)

Public

## Contact name

Mr Myles Dakin

## ORCID ID

<https://orcid.org/0000-0002-0294-4908>

## Contact details

Hypo-Stream Cambridge

Unit 9 Beech House

Melbourn Science Park

Melbourn

Cambridge

United Kingdom

SG8 6HB

+44 (0)1763 261129

[myles.dakin@hypo-stream.com](mailto:myles.dakin@hypo-stream.com)

# Additional identifiers

## Clinical Trials Information System (CTIS)

Nil known

## Protocol serial number

HS4-20 SE

# Study information

## Scientific Title

Open-label, exposure-escalation study to evaluate the safety and tolerability of nebulised HS4-20 in healthy volunteers

## Acronym

SEHS4-20

## Study objectives

That inhalation of HS4-20 via a nebuliser is safe and without adverse events over long periods of time.

## Ethics approval required

Old ethics approval format

## Ethics approval(s)

Ethics approval not required. An open-label, exposure escalation study was planned following a safety evaluation via formal scientific advice from the HMRA and subsequent formal scientific

advice from the EMA. The study was planned and directed by Prof. R Aspinall (translational medicine) and Dr Thomas Kenny (formerly director at NIHR).

## **Study design**

Open-label exposure-escalation study

## **Primary study design**

Interventional

## **Study type(s)**

Treatment

## **Health condition(s) or problem(s) studied**

Safety evaluation of nebulised HS4-20 physiologic aqueous chlorine aerosol

## **Interventions**

Pulmonary administration of HS4-20 as an aerosol via a nebuliser.

The healthy volunteers were divided into three cohorts:

1. Two adults. Exposure escalation from 30 seconds increasing to 30 minutes. A subsequent day exposure escalation from 5 minutes escalating to 90 minutes.
2. Four adults. Exposure escalation from 30 seconds to 20 minutes. Subsequent day exposure for 20 minutes repeated twice.
3. 12 adults and children. An induction phase of 5 minutes escalating to 20 minutes. Subsequent day exposure of 20 minutes.

## **Intervention Type**

Drug

## **Phase**

Phase I

## **Drug/device/biological/vaccine name(s)**

HS4-20

## **Primary outcome(s)**

Treatment-emergent adverse events measured using observation for the absence of abnormality and of coordination by a clinically trained investigator over a 30-minute period following administration. Follow-up was 7 days post-administration self-reporting. The final follow-up was over a 12-month period of self-reporting and investigator interview.

## **Key secondary outcome(s)**

1. Blood pressure measured with an automatic upper arm cuff sphygmomanometer (Omron X3) at baseline (pre-administration), 30 seconds, 2, 5, 10, 20, 30 minutes post-administration in first and second cohorts, the third cohort was measured at 30 seconds, 5, 20, 30 minutes
2. Oxygen saturation measured by pulse oximeter (Braun Healthcare Pulse Oximeter 1) throughout the periods of exposure and for 30 minutes after cessation of administration

## **Completion date**

20/09/2020

# Eligibility

## Key inclusion criteria

Healthy volunteers, no exclusions on basis of age or gender

## Participant type(s)

Healthy volunteer

## Healthy volunteers allowed

No

## Age group

All

## Sex

All

## Total final enrolment

18

## Key exclusion criteria

Does not meet the inclusion criteria

## Date of first enrolment

01/06/2015

## Date of final enrolment

20/09/2020

# Locations

## Countries of recruitment

United Kingdom

England

## Study participating centre

Hypo-Stream Ltd

Unit 9 Beech House

Melbourn Science Park

Melbourn

Cambridge

United Kingdom

SG8 6HB

# Sponsor information

**Organisation**  
Hypo-Stream Ltd

## Funder(s)

**Funder type**  
Industry

**Funder Name**  
Hypo-Stream 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?
<a href="#">Participant information sheet</a>			09/12/2021	No	Yes
<a href="#">Protocol file</a>	version 1.0		09/12/2021	No	No