Clinical Study Results

AstraZeneca

Research Sponsor: AstraZeneca AB

Drug Studied: Sodium zirconium cyclosilicate, also called SZC

Study Title: A study to learn how sodium zirconium cyclosilicate worked and how safe it was for people who needed emergency treatment for high levels of potassium in their blood

Thank you!

Thank you to the participants who took part in the clinical study for the study drug sodium zirconium cyclosilicate, also called SZC. All of the participants helped researchers learn more about SZC to help people with high levels of potassium in their blood. This condition is also called hyperkalemia.

AstraZeneca sponsored this study and thinks it is important to share the results of the study with the participants and the public. An independent non-profit organization called CISCRP helped prepare this summary of the study results. We hope it helps the participants understand and feel proud of their important role in medical research.

If you participated in the study and have questions about the results, please speak with the doctor or staff at your study site.

What is happening with the study now?

The participants were in the study for up to 8 days, but the entire study took 11 months to finish. The study started in February 2018 and ended in December 2018.

The study included 70 participants in Denmark, Italy, Russia, and the United States.

The sponsor reviewed the data collected when the study ended and created a report of the results. This is a summary of that report.

Why was the research needed?

Researchers are looking for a better way to treat patients who need emergency treatment for high blood potassium. Before a drug can be approved for patients to take, researchers do clinical studies to find out how safe it is and how it works.

In this study, the researchers wanted to find out if SZC works in a small number of participants who needed emergency treatment for high blood potassium. They also wanted to find out if the participants had any medical problems during the study.

People with high levels of potassium in their blood often don't have any symptoms that can be seen, but may have problems with their heartbeat. This can be dangerous and in rare cases, it can lead to death.

Very high blood potassium is normally treated with a type of sugar called glucose and a hormone called insulin that lowers glucose in the blood. This treatment works quickly to remove potassium from the blood but only lasts for 4 to 6 hours. In this study, the researchers wanted to learn if adding SZC to insulin and glucose treatment affected the participants' blood potassium levels 4 hours after treatment. SZC was designed to work by attaching to potassium in the gut and stopping it from getting into the blood.

The main questions the researchers wanted to answer in this study were:

- Did SZC decrease the amount of potassium in the participants' blood?
- What medical problems did the participants have during the study?

To answer the questions in this study, researchers asked for the help of men and women who needed emergency treatment for high blood potassium. The participants in this study were 30 to 95 years old. People whose high blood potassium could not be treated by insulin and glucose could not take part in this study.

What kind of study was this?

This was a “double-blind” study. This means none of the participants, doctors, or other study staff knew what treatment each participant took. Some studies are done this way because knowing what treatment the participants are taking can affect the results of the study. When the study ended, the research sponsor found out which treatment participants took so they could create a report of the study results.

In this study, the participants took SZC or a placebo.

A placebo looks like a drug but does not have any medicine in it. Researchers use a placebo to help make sure any of the effects they see in the participants who take the drug are actually caused by the drug.

SZC and the placebo were each taken by mouth, as a powder mixed with water. The doses of SZC were each 10 grams.

All the participants also got insulin and glucose through a needle into their vein, also called IV infusion. Each dose of insulin was measured at 0.1 units per kilogram of body weight. Each dose of glucose was 25 grams.

A computer program was used to randomly choose whether the participants took SZC or the placebo. This helps make sure the groups are chosen fairly. Researchers do this so that comparing the results of each treatment is as accurate as possible. There were 33 participants chosen to take SZC, and 37 participants chosen to take the placebo.

What happened during the study?

Before the participants took study treatment, the doctors:

- checked the overall health of the participants to make sure that they could join the study
- took blood samples to check the participants' blood potassium levels
- took urine samples
- checked the participants' heart health using an electrocardiogram, also known as an ECG

This was done at the same visit that the participants took their study treatment.

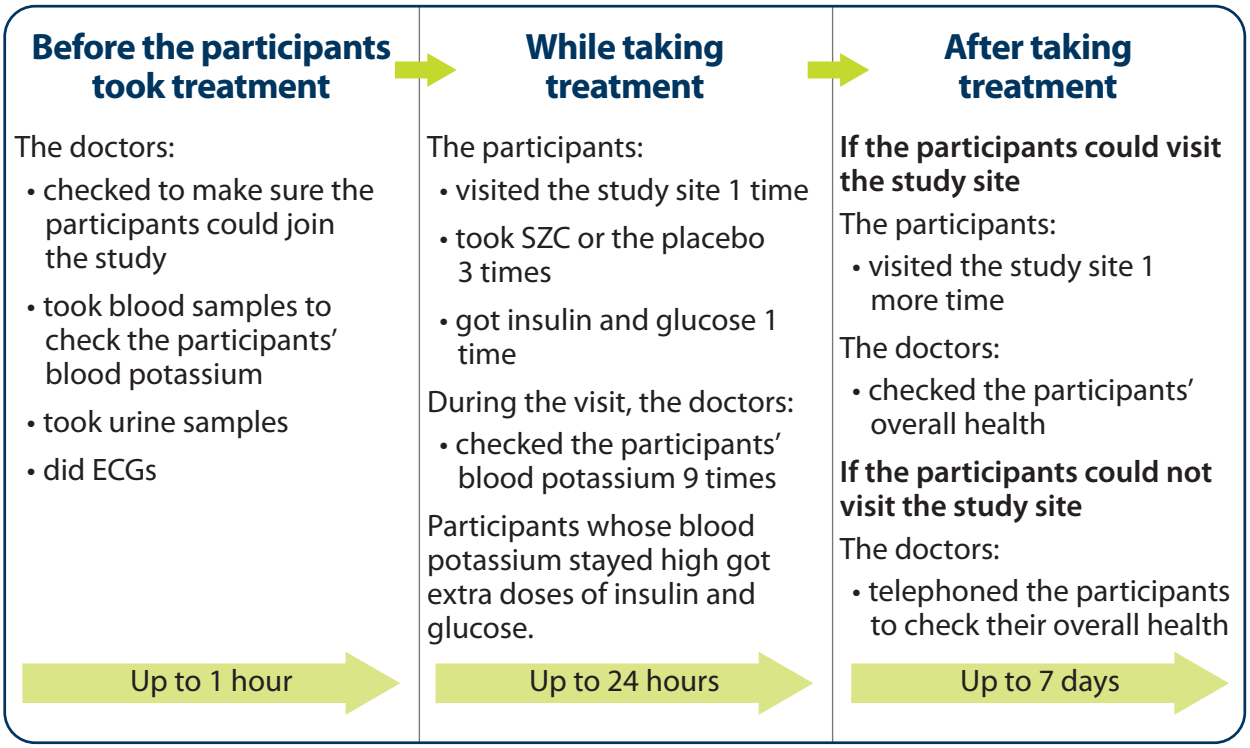
While the participants took study treatment, they visited the study site 1 time. At the beginning of this visit, they took SZC or the placebo. They also received insulin and glucose infusions at the same time. Then, the participants took SZC or the placebo again at 4 hours and 10 hours after taking the first dose.

The participants whose blood potassium stayed too high could get extra treatments. When possible, these were given more than 4 hours after the first dose of SZC. SZC was not given as one of these extra treatments.

This visit lasted about 24 hours. During this visit, the doctors checked the participants' blood potassium levels 9 times.

About 7 days after taking study treatment, the participants visited the study site 1 more time. At this visit, the doctors checked the participants' overall health. If a participant could not get to the study site for this visit, the doctors telephoned the participant to see how he or she was feeling.

The chart below shows what happened during the study.



What were the results of the study?

This is a summary of the main results from this study overall. The results each participant had might be different and are not in this summary. A full list of the questions researchers wanted to answer can be found on the websites listed at the end of this summary. If a full report of the study results is available, it can also be found on these websites.

Researchers look at the results of many studies to decide which treatments work best and are safest. Other studies may provide new information or different results. Always talk to a doctor before making any treatment changes.

Did SZC decrease the amount of potassium in the participants' blood?

The researchers found that the participants in both treatment groups had less potassium in their blood after taking treatment. But, the difference between treatment groups was too small for researchers to know if SZC decreased the amount of blood potassium compared to the placebo.

To answer this question, the doctors measured the participants' blood potassium 4 hours after they took SZC or the placebo. Blood potassium is measured as millimoles of potassium per liter of blood, also called mmol/L. The researchers then calculated the average change in blood potassium from the time the participants took their treatment to 4 hours later.

The researchers found that 4 hours after taking treatment, the participants had an average of:

- 0.41 mmol/L less potassium in their blood after taking SZC
- 0.27 mmol/L less potassium in their blood after taking the placebo

What medical problems did participants have during the study?

This section is a summary of the medical problems the participants had during the study that the study doctors thought might be related to the study drug. These medical problems are called "adverse reactions". An adverse reaction is considered "serious" when it is life-threatening, causes lasting problems, or requires hospital care.

These adverse reactions may or may not be caused by the study treatments. A lot of research is needed to know whether a treatment is the cause of an adverse reaction.

The websites listed at the end of this summary may have other information about adverse reactions or other medical problems that happened during this study.

Only 62 participants took at least 1 dose of SZC or placebo, so the section below only includes the results from these participants.

How many participants had serious adverse reactions?

None of the participants had a serious adverse reaction during this study.

How many participants had adverse reactions?

- 1.6% of participants had an adverse reaction during the study. This was 1 out of 62 participants.
- 3.4% of participants who took SZC had an adverse reaction during the study. This was 1 out of 29 participants.
- None of the participants who took the placebo had an adverse reaction during the study.

None of the participants stopped taking study treatment because of adverse reactions they had during the study.

What adverse reactions did the participants have?

The only adverse reaction was high blood glucose. This happened in 3.4% of the participants who took SZC. This was 1 out of 29 participants who took SZC.

How has this study helped patients and researchers?

This study helped researchers learn how SZC might be used in the future to treat participants who need emergency treatment for high blood potassium.

Researchers look at the results of many studies to decide which treatments work best and are safest. This summary shows only the main results from this one study. Other studies may provide new information or different results.

Further clinical studies with SZC are planned.

Where can I learn more about this study?

You can find more information about this study on the websites listed below. If a full report of the study results is available, it can also be found here.

- www.clinicaltrials.gov. Once you are on the website, type **"NCT03337477"** into the search box, and click **"Search"**.
- www.clinicaltrialsregister.eu. Once you are on the website, click **"Home and Search"**, then type **"2017-003955-50"** into the search box, and click **"Search"**.
- www.AstraZenecaClinicalTrials.com. Once you are on the website, type **"D9480C00005"** into the search box, and click **"Find a Study"**.

Full Trial Title: A Phase 2, Multicenter, Randomized, Double-blind, Placebo controlled Study to Evaluate a Potassium Normalization Treatment Regimen Including Sodium Zirconium Cyclosilicate (ENERGIZE)

National Clinical Trials number: NCT03337477

AstraZeneca Protocol Number: D9480C00005

AstraZeneca AB, sponsored this study and has its headquarters in Södertälje, Sweden.

The phone number for the AstraZeneca Information Center is +1 877 240 9479.

Thank you!

Clinical study participants belong to a large community of people who take part in clinical research around the world. They help researchers answer important health questions and find medical treatments for patients.

CISCRP

The Center for Information & Study on Clinical Research Participation (CISCRP) is a non-profit organization focused on educating and informing the public about clinical research participation. CISCRP is not involved in recruiting participants for clinical studies, nor is it involved in conducting clinical studies.

CISCRP
One Liberty Square, Suite 1100 • Boston, MA 02109
1-877-MED-HERO • www.ciscrp.org