Summary of Results for Laypersons

What was the Study Called?

A Phase 3b, Multicenter, Randomized, Double-blind, Placebo-controlled Study to Evaluate the Effect of Caffeine Intake on Single Photon Emission Computed Tomography (SPECT) Myocardial Perfusion Imaging (MPI) in Subjects Administered Regadenoson

Why was this Study Needed?

Regadenoson (previously called CVT3146) is a medicine that relaxes and widens the blood vessels of the heart and is commonly used in pharmacologic stress testing. Pharmacologic stress testing is a diagnostic procedure in which stress on the heart is induced by medicines (such as regadenoson) instead of exercise. In this study, regadenoson was used during a single photon emission computed tomography (SPECT) myocardial perfusion imaging (MPI) scan. This type of scan allows the doctor to see how well blood flows through a patient's heart muscle. It can show areas of the heart muscle that are not getting enough blood flow. This test is often called a nuclear stress test. It can also show how well the heart muscle is pumping. A SPECT MPI scan is used in patients with chest discomfort to see if the discomfort comes from lack of blood flow to the heart muscle caused by narrowed or blocked heart vessels (angina). This scan also shows the doctor if heart vessels are blocked and if the patient has had a heart attack in the past.

Some medicines may interact with or interfere with other medicines a patient is taking. This study was done to find out if consuming caffeine shortly (90 minutes) before having a SPECT MPI scan with regadenoson would result in a different diagnosis than if caffeine had not been consumed. This was done by giving some patients caffeine and regadenoson and some patients regadenoson and a placebo and then having all patients undergo a SPECT MPI scan.

The main question this study helped answer was if caffeine consumed 90 minutes before the administration of regadenoson interferes with the results of a SPECT MPI scan in patients with a known likelihood of having coronary artery disease (CAD). Also, it was important to find out what unwanted effects might occur.

This study took place at 24 clinics in the United States between March 2009 and July 2010. When the study ended, the sponsor (Astellas) reviewed all the study information and created a report of the results. This is a summary of that report.

What Kind of Study was This and Who Took Part in it?

This was a "blinded" study. In this study, all patients received regadenoson but the patients and study doctors did not know who consumed caffeine or placebo. A "placebo" is a dummy treatment such as a tablet or capsule that looks like a medicine, but does not have any medicine in it. Using a placebo helps make study results fair and unbiased. This is because study doctors and patients cannot tell who is taking a placebo and who is taking the real medicine. Patients were picked for each treatment group by chance alone.

Both men and women took part in the study. They were all over 18 years old. To be included in the study, patients had to have had a test or tests performed to diagnose heart disease within 3 months before the start of the study. In addition, patients had to have signs and symptoms of CAD as determined by the study doctor.

All patients had a SPECT MPI performed on study day 1. If they met criteria based on the results of the SPECT MPI, they returned to the study clinic on day 3 and were assigned to 1 of the following 3 treatment groups listed below:

- Placebo + regadenoson 0.4 mg
- Caffeine 200 mg + regadenoson 0.4 mg
- Caffeine 400 mg + regadenoson 0.4 mg

On day 5, patients consumed caffeine or placebo capsules by mouth 90 minutes before the administration of regadenoson as a single injection into a vein in their arm. After the injection of regadenoson, all patients had a SPECT MPI performed. Patients then went home and returned to the clinic the next day for a follow-up visit.

A total of 347 patients were enrolled in the study. A total of 345 patients received at least 1 dose of study medicine and are listed below by treatment group.

- 113 patients took placebo + regadenoson 0.4 mg
- 116 patients took caffeine 200 mg + regadenoson 0.4 mg
- 116 patients took caffeine 400 mg + regadenoson 0.4 mg

Of the 345 patients who received at least 1 dose of study medicine, 207 patients had SPECT MPI scans with results that could be interpreted. Information on the 207 patients is included in the table below.

	Number of Patients
Age Group Aged 18 years and older	 207
Men Women	164 43
EU Countries Outside EU	0 207

What Were the Study Results?

Results from the study showed that caffeine consumed 90 minutes before regadenoson did interfere with the accuracy of results from the SPECT MPI scan. There were no safety concerns with adverse reactions reported during the treatment period. Adverse reactions reported were similar in each treatment group.

What Adverse Reactions did Patients Have?

A lot of research is needed to know whether a medicine causes a medical problem. So when new medicines are being studied researchers keep track of all medical problems that patients have while they are in the study. These medical problems are called “adverse events” and are recorded whether or not they might be caused by the treatment taken. An “adverse reaction”

is any medical problem or "adverse event" that is judged by the study doctor to be possibly caused by a medicine or treatment used in the study.

The table below shows the most common adverse reactions experienced by greater than 5% of patients while taking part in this study. Information on the 345 patients who received at least 1 dose of study medicine is included in the table below.

Adverse Reaction	**Number of Placebo + Regadenoson Patients (out of 113)**	**Number of caffeine 200 mg + Regadenoson Patients (out of 116)**	**Number of caffeine 400 mg + Regadenoson Patients (out of 116)**
Upper belly pain	6	4	5
Nausea or urge to vomit	13	16	10
Stomach discomfort	7	4	4
Chest discomfort	22	24	19
Chest pain	8	1	2
Feeling hot	3	5	6
Dizziness(or sensation of lightheadedness, unsteadiness, or giddiness)	21	23	17
Taste changes	3	11	4
Headache or head pain	36	36	38
Shortness of breath	43	47	33
Sudden reddening of the face and/or neck	27	28	26
Belly discomfort	6	3	5
Tingling or pricking ("pins and needles")	2	5	4

An adverse reaction is considered "serious" when it is life threatening, causes lasting problems, or needs hospital care. There were no serious adverse reactions or deaths reported in this study.

Where Can I Learn More About This Study?

After evaluating the results of this clinical study Astellas may perform additional studies to better understand regadenoson.

This summary of the clinical study results is available online at http://www.astellasclinicalstudyresults.com. Please remember that researchers look at the results of many studies to find out how well medicines work and which adverse reactions they might cause. If you have questions about regadenoson, please discuss these with your doctor.

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