Plain Language Summary of Study Results

Astellas is grateful to the patients who took part in this clinical study. Thank you.

What was the Study Called?

A Phase 2a, Randomized, Double-blind, Placebo-controlled, Two Period, Crossover Study to Assess the Effect of CK-2127107 on Physical Function in Subjects with Chronic Obstructive Pulmonary Disease

Why was this Study Needed?

Patients with chronic obstructive pulmonary disease (COPD) have lungs that do not work well. With this disease it becomes more and more difficult to breathe. Even after a short walk, they will become breathless. Their legs will feel weak and tired (called 'muscle fatigue'). When a patient's arms and legs are weak they have trouble doing their daily activities. There is an increased risk of falling. Exercise can help improve muscle strength but not all patients respond well enough. There was a need to study new treatments to improve muscle fatigue in patients with COPD.

CK-2127107 (also known as ASP3318) is an experimental medicine taken by mouth. It may improve muscle strength and fatigue.

In this study, patients with chronic obstructive pulmonary disease (COPD) took CK-2127107 and placebo, but not at the same time. (The section below describes what placebo tablets are.) This study looked at how much exercise patients with COPD can do. It compared the amount of exercise after patients had taken study medicine (CK-2127107 or placebo) for 14 days. It was also important to find out what unwanted effects these patients had from the study medicines.

The study started in June 2016 and ended in June 2018. The sponsor of this study (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 "double-blinded" study. That means that the patients and the study doctors did not know who took which of the study medicines (CK-2127107 or placebo). This helps make study results fair and unbiased. One of the study medicines was placebo. A "placebo" is a dummy treatment that looks like a medicine, but does not have any medicine in it.

This study included women and men diagnosed with moderate to severe chronic obstructive pulmonary disease (COPD). They were 40 to 75 years of age. They walked slower than others their age because they became breathless while walking. Or they had to stop for breath after walking about 328 feet. They were stable with no recent changes in medication. They had no hospitalization within 6 weeks of their first study visit. Patients currently smoke cigarettes. Or they used to smoke cigarettes in the past.

What Happened during the Study?

During the study, the study doctor did a check-up of the patients at several study visits. At the first visit, the study doctor checked the patients to see if they could be in the study. Patients who could be in the study were picked for 1 of 2 treatment groups by chance alone. Patients took both CK-2127107 and placebo, but in a different order. Patients in group 1 took CK-2127107 first and then switched to placebo. Patients in group 2 took placebo first and then switched to CK-2127107.

- Treatment group 1: Patients took CK-2127107 tablets (500 milligrams) twice a day. They took those tablets for 14 days. Then patients took no study medicine for 14 days. Next, patients took placebo tablets twice a day for 14 days. Placebo is a dummy treatment, it has no medicine in it.
- Treatment group 2: Patients took placebo tablets twice a day for 14 days. Then they took no study medicine for 14 days. Next, patients took CK-2127107 tablets (500 milligrams) twice a day. They took those tablets for 14 days.

This study took place at 2 clinics in the United States. 46 patients were in the study.

	Number of Patients
Age Group	
Aged 18 years to 64 years	25
Aged 65 years to 84 years	21
Sex	
Men	21
Women	25

What Were the Study Results?

This study looked at how much exercise patients with COPD can do. To measure that, patients rode a bicycle until it was no longer tolerable. This is called the 'endurance' time. Patients took CK-2127107 or placebo (a dummy treatment, it has no medicine in it) for 14 days. The length of time patients exercised before and after taking study medicine was measured. This change was measured in seconds.

After patients took CK-2127107 for 14 days, the average change in endurance time was about 15.7 seconds less than it had been before patients took it. It was about 0.5 seconds less after patients took placebo. A statistical test showed that the difference between the treatments was likely to be due to chance.

There was no improvement after taking CK-2127107.

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 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.

Patients in the 2 treatment groups were supposed to take both CK-2127107 and placebo, but in a different order. Some patients took CK-2127107 first and then switched to placebo. Other patients took placebo first and then switched to CK-2127107. Some patients stopped being in the study after only taking 1 of the 2 study medicines.

41 patients took at least 1 dose of placebo during the study. 42 patients took at least 1 dose of CK-2127107 during the study.

13 patients (31.0%, or 13 out of 42 patients) who took CK-2127107 had adverse reactions in this study and 5 patients (12.2%, or 5 out of 41 patients) who took placebo. Placebo is a dummy treatment, it has no medicine in it.

The table below shows the most common adverse reactions experienced by patients.

Adverse Reaction	**CK-2127107 (out of 42 patients)**	**Placebo (out of 41 patients)**
Dizziness (or sensation of lightheadedness, unsteadiness, or giddiness)	3 (7.1%)	0
Dry mouth	2 (4.8%)	0
Increased amount of a protein in the blood, which indicates the kidneys are not working well	2 (4.8%)	0
Test shows kidneys not working well	2 (4.8%)	0
Vomiting	2 (4.8%)	0

An adverse reaction is considered "serious" when it is life-threatening, causes lasting problems or needs hospital care.

1 patient (2.4%, or 1 of 41 patients) who took placebo had a serious adverse reaction in this study. Placebo is a dummy treatment, it has no medicine in it.

Where Can I Learn More About This Study?

This document is a short summary of the main results from this study. You can find this summary and more information about this study 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. This summary only shows the results of this 1 study. Your doctor may help you understand more about the results of this study.

Sponsor contact details:

Astellas Pharma Global Development
1 Astellas Way
Northbrook, IL 60062
USA