Clinical Study Results

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Study Sponsor: UCB S.A. Pharma Sector

Treatment Studied: Levetiracetam

Protocol Number: N051

Short Study Title: A study to learn if levetiracetam reduced seizures in participants with epilepsy

Thank you!

UCB thanks all the participants of this study. All the participants helped the researchers learn more about using levetiracetam in participants with epilepsy. Levetiracetam is also called Keppra®.

This is a summary of the main results of this study. An independent, non-profit organization called CISCRP helped prepare this summary of the study results.

We think it is important to share the results with the participants and the public. We hope this summary helps the participants understand and feel proud of their important role in medical research.

The purpose of this summary is only to share information. If you need medical advice, please contact your doctor. If you participated in this study and have questions about the results, please speak with a doctor or study staff.

Why was the research needed?

Before a treatment is available to all patients, researchers do clinical studies to get information about how well the treatment works and about how safe it is.

The researchers in this study wanted to learn if levetiracetam worked in a large number of participants with epilepsy. They also wanted to learn if the participants had any medical problems during the study.

Epilepsy is a brain disorder that causes seizures. The symptoms of seizures can be different for each person but often include uncontrollable shaking and loss of consciousness.

Epileptic seizures that cannot be controlled by epilepsy medications are also known as refractory seizures or uncontrolled seizures. Researchers think that taking levetiracetam may help reduce uncontrolled seizures.

In this study, the researchers wanted to find out if levetiracetam helped reduce uncontrolled seizures in participants with epilepsy.

What were the main questions studied?

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

- Did levetiracetam affect how many seizures the participants had per week?
- What medical problems did the study doctors think might be related to the study treatments?

Who participated in the study?

There were 324 males and females with epilepsy who participated in this study and took study treatment. The participants were 14 to 69 years old.

The study included participants who took study treatment in 5 countries: Belgium, France, Germany, Switzerland, and the United Kingdom.

In this study, the researchers planned to include participants with epilepsy who:

- Were already taking 1 or 2 epilepsy medications but were still having uncontrolled seizures
- Had at least 4 uncontrolled seizures every 4 weeks within the 12 weeks before taking the study treatment

Each participant was in the study for up to 11 months, but the whole study lasted for 2 years. The study started in October 1993 and ended in October 1995.

What treatments did the participants take?

There were 3 different treatments in this study. Each participant first took 1 of these 3 treatments in addition to their regular epilepsy medication. Then, they switched and took 1 of the other 2 treatments in addition to their regular epilepsy medication. This helps researchers get more accurate results, because they can see and compare how different treatments work in the same person.

The 3 treatments were 2 different doses of levetiracetam or a placebo. Levetiracetam and the placebo were taken as tablets by mouth, twice a day for about 34 weeks. The placebo tablets looked like the levetiracetam tablets but did not have any levetiracetam in them. The researchers used the placebo to help make sure the effects they found in the study were actually caused by levetiracetam.

None of the participants, caregivers, study doctors, or study staff knew what treatments each participant was taking. UCB staff also did not know. Some studies are done this way because knowing what treatment the participants are taking can affect the results of the study. After the study was completed, UCB learned what treatment each participant took so they could create a report of the results.

The researchers used a computer program to randomly choose which 2 treatments the participants took and in what order. This helped make sure the treatments were chosen fairly and comparing the results for the treatments was as accurate as possible.

The study happened in 2 parts. Each part lasted for 16 weeks.

In Part 1, the participants took either 1 of the 2 different doses of levetiracetam or the placebo. The doses of levetiracetam per day were either 1,000 or 2,000 milligrams, also known as mg.

Then, in Part 2, the participants took 1 of the treatments that they didn't take in Part 1.

The chart below shows the different possible orders in which the participants could have taken the study treatments.

Study treatment in Part 1		Study treatment in Part 2
1,000 mg of levetiracetam	THEN	Placebo OR 2,000 mg of levetiracetam
2,000 mg of levetiracetam		Placebo OR 1,000 mg of levetiracetam
Placebo		1,000 mg of levetiracetam OR 2,000 mg of levetiracetam

During Part 1 of the study:

- 106 participants took 1,000 mg of levetiracetam
- 106 participants took 2,000 mg of levetiracetam
- 112 participants took the placebo

During Part 2 of the study:

- 94 participants took 1,000 mg of levetiracetam
- 96 participants took 2,000 mg of levetiracetam
- 88 participants took the placebo

The chart below shows the treatments the researchers studied.

	200 total participants took 1,000 mg of levetiracetam
	202 total participants took 2,000 mg of levetiracetam
	200 total participants took the placebo
	The participants took levetiracetam and the placebo as tablets by mouth
	The participants took levetiracetam or the placebo twice a day for about 34 weeks

What happened during this study?

Before starting Part 1 of the study, the participants visited their clinic 4 times. All the participants first learned about the study and then decided to join. This is called “informed consent”. Then, the study doctors and study staff asked the participants about their medical history and checked their health to make sure they could join the study. This part lasted 12 weeks. The participants took their regular epilepsy medication.

At some of these visits, the study doctors:

	Kept track of any medical problems reported by the participants or observed by the study doctors or study staff
	Took blood samples
	Checked the participants' heart health using an electrocardiogram, also called an ECG
	Checked the participants' brain health using an electroencephalogram, also called an EEG
	If needed, took pictures of each participants' brain using CT or MRI scans
	Asked the participants about their symptoms and quality of life

The study doctors also did some of these tests and measurements at different visits throughout the rest of the study.

During Part 1 of the study, the participants visited their clinic 4 times. Part 1 lasted for 16 weeks.

During Part 2 of the study, the participants visited their clinic 4 times. Part 2 lasted for 16 weeks.

During both of these Parts, the participants:

	Took levetiracetam or the placebo twice each day, once in the morning and once in the evening
	Continued taking their regular epilepsy medication
	Kept track of their seizures in a diary

After Part 2 of the study, the participants could immediately join a different study for levetiracetam. Or, they had their dose of levetiracetam slowly decreased over 2 weeks until they were taking none. These participants visited their clinic once, at the end of the 2 weeks. The study doctors checked the participants' health and asked about any medical problems they were having.

What were the results of the study?

This is a summary of the main results from this study. These are the results from all the participants combined. The individual results of each participant might be different and are not in this summary.

Deciding which treatments work best usually takes results from several studies. Other studies may provide new information or different results. Always talk to a doctor before making any treatment decisions.

The results below are for the participants who gave information about their seizures during both Part 1 and Part 2 of the study and had taken at least 1 dose of study treatment. This was:

- 183 out of 200 participants who took 1,000 mg of levetiracetam during any part of the study
- 175 out of 202 participants who took 2,000 mg of levetiracetam during any part of the study
- 172 out of 200 participants who took the placebo during any part of the study

Did levetiracetam affect how many seizures the participants had per week?

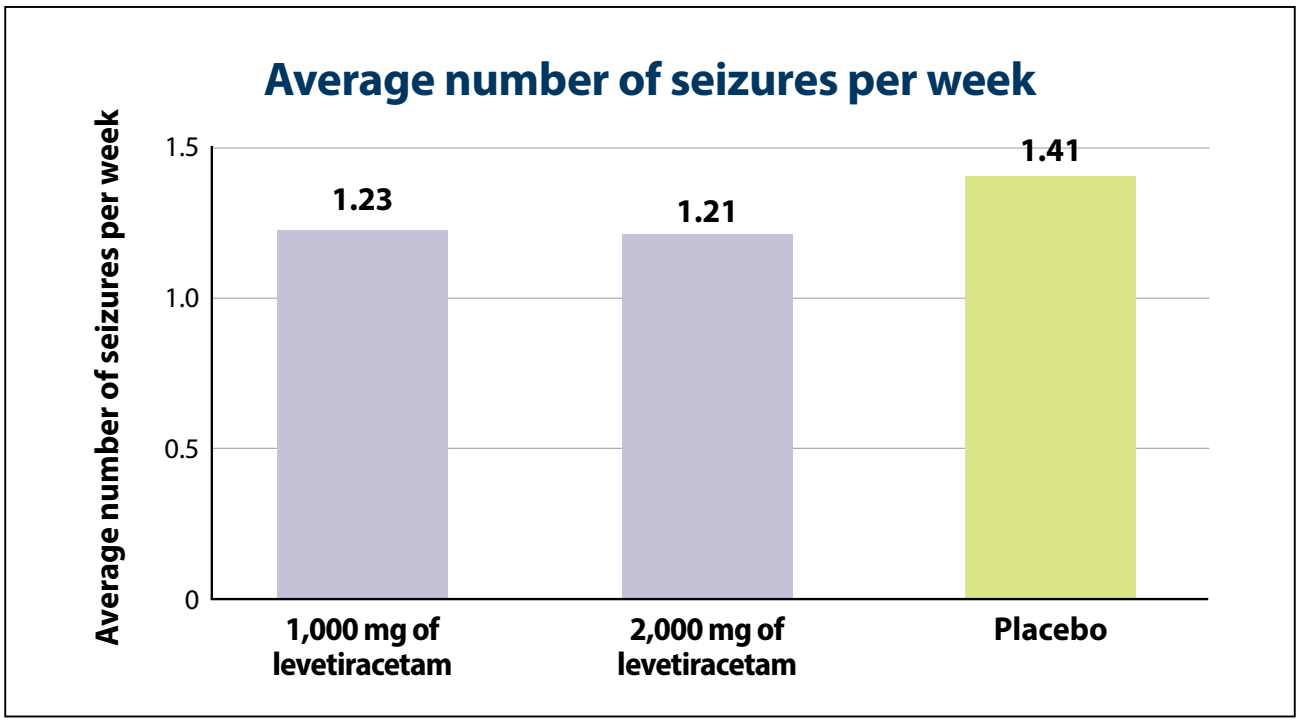
Yes. Overall, the participants who took levetiracetam had fewer seizures per week than the participants who took the placebo.

To answer this question, the study doctors counted the number of seizures the participants had during the study. Then, they estimated the average number of seizures per week.

Overall, the researchers found that the average number of seizures per week was:

- 1.23 seizures per week for the participants who took 1,000 mg of levetiracetam
- 1.21 seizures per week for the participants who took 2,000 mg of levetiracetam
- 1.41 seizures per week for the participants who took the placebo

The chart below shows these results.



Then, the researchers compared the average number of seizures per week in the participants who took levetiracetam and in the participants who took the placebo.

They found that the percentage difference in the average number of seizures per week between the participants who took 1,000 mg of levetiracetam and the participants who took the placebo was 16.9%.

They found that percentage difference in the average number of seizures per week between the participants who took 2,000 mg of levetiracetam and the participants who took the placebo was 18.5%.

What medical problems did the study doctors think might be related to the study treatments?

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 treatments. In this summary, these medical problems are called “adverse reactions”. Some participants had more than 1 adverse reaction.

This summary also includes information about serious adverse reactions. An adverse reaction is considered “serious” when it is life-threatening, causes lasting problems, or requires hospital care.

Other studies may or may not show that these medical problems were related to the study treatments. The results from several studies are often needed to decide what medical problems are actually caused by a treatment. Always talk to a doctor before making any treatment decisions.

How many participants had serious adverse reactions?

Serious adverse reactions happened in:

- 2.5% of participants while they were taking 1,000 mg of levetiracetam. This was 5 out of 200 participants.
- 5.9% of participants while they were taking 2,000 mg of levetiracetam. This was 12 out of 202 participants.
- 2.5% of participants while they were taking the placebo. This was 5 out of 200 participants.

None of the participants died due to serious adverse reactions.

What serious adverse reactions did the participants have?

The table below shows the serious adverse reactions that happened during the study. Some of the participants may have had more than 1 serious adverse reaction. The most common serious adverse reaction was a seizure.

Serious adverse reactions during the study

Serious adverse reaction	1,000 mg of levetiracetam (out of 200 participants)	2,000 mg of levetiracetam (out of 202 participants)	Placebo (out of 200 participants)
Seizure	1.0% (2)	1.0% (2)	1.0% (2)
Grand mal seizure	1.0% (2)	0.5% (1)	0.5% (1)
Suicide attempt	0.5% (1)	0.5% (1)	0.0% (0)
Accidental injury because of seizures	0.0% (0)	1.5% (3)	1.0% (2)
Headache	0.0% (0)	1.0% (2)	0.0% (0)
Losing touch with reality	0.0% (0)	1.0% (2)	0.0% (0)
Seizures that start in 1 part of the brain and spread, and that last too long or happen back-to-back	0.0% (0)	0.5% (1)	0.5% (1)
Depression	0.0% (0)	0.5% (1)	0.0% (0)
Dizziness	0.0% (0)	0.5% (1)	0.0% (0)
Double vision	0.0% (0)	0.5% (1)	0.0% (0)
Extreme nervousness	0.0% (0)	0.5% (1)	0.0% (0)
Feeling of spinning	0.0% (0)	0.5% (1)	0.0% (0)
Feeling generally unwell	0.0% (0)	0.5% (1)	0.0% (0)
Loss of muscle coordination	0.0% (0)	0.5% (1)	0.0% (0)
Sleepiness	0.0% (0)	0.5% (1)	0.0% (0)
Personality disorder	0.0% (0)	0.5% (1)	0.0% (0)

How many participants had any adverse reactions?

Adverse reactions happened in:

- 37.5% of participants while they were taking 1,000 mg of levetiracetam. This was 75 out of 200 participants.
- 45.0% of participants while they were taking 2,000 mg of levetiracetam. This was 91 out of 202 participants.
- 35.5% of participants while they were taking the placebo. This was 71 out of 200 participants.

What adverse reactions did the participants have?

The table below shows the adverse reactions that happened in 5.0% or more participants in any of the treatment groups. This means they happened in at least 10 out of every 200 participants in any of the treatment groups. There were other adverse reactions, but these happened in fewer participants.

Adverse reactions in 5.0% or more of participants in any treatment group

Adverse reaction	1,000 mg of levetiracetam (out of 200 participants)	2,000 mg of levetiracetam (out of 202 participants)	Placebo (out of 200 participants)
Headache	7.0% (14)	6.9% (14)	3.5% (7)
Weakness or lack of energy	6.5% (13)	12.4% (25)	6.5% (13)
Seizure	5.0% (10)	5.9% (12)	7.5% (15)

How has this study helped patients and researchers?

The results of this study have helped researchers learn more about using levetiracetam in people with epilepsy.

Deciding which treatments work best for patients almost always takes results from several studies. This summary shows only the main results from this 1 study. Other studies may provide new information or different results.

The purpose of this summary is only to share information. If you need medical advice about your own health or situation, please contact your doctor.

The results of this study may be used in other studies to compare levetiracetam with other treatments for people who have epilepsy.

At the time this study ended, further clinical studies in epilepsy with levetiracetam were planned.

Where can I learn more about this study?

If you have questions about this study, contact information for UCB is available at www.ucb.com/UCBCares.

Study Information

Protocol Number: N051

Study Sponsor: UCB S.A Pharma Sector sponsored this study. It is referred to as UCB in this summary. UCB S.A. Pharma Sector is now called UCB Biopharma SRL.

Full Study Title: Evaluation of the efficacy and tolerability of UCB L059 (500 and 1000 mg b.i.d., tablets) add-on treatment in refractory epileptic patients with partial onset seizures: a 32-week double-blind placebo-controlled crossover multicenter trial

Thank you!

Participants in clinical studies 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.

Glossary

Description	Also called
Double vision	Diplopia
Extreme nervousness	Agitation
Feeling generally unwell	Malaise
Feeling of spinning	Vertigo
Grand mal seizure	Grand mal convulsion
Losing touch with reality	Psychosis
Loss of muscle coordination	Ataxia
Seizure	Convulsion
Seizures that start in 1 part of the brain and spread, and that last too long or happen back to back	Status epilepticus partial
Sleepiness	Somnolence
Weakness or lack of energy	Asthenia

This summary was last updated on 21 May 2021.
The final clinical study report is dated 23 November 1998.