



Boehringer Ingelheim and Lilly present full results of Tradjenta®'s CARMELINA® cardiovascular outcome trial

October 4, 2018

- Tradjenta® (linagliptin) demonstrated similar long-term cardiovascular safety compared with placebo in adults with type 2 diabetes

- The overall safety profile of Tradjenta in the trial, including adults with kidney disease, was consistent with previous data and no new safety signals were observed

- The results of CARMELINA® were presented at the 54th EASD Annual Meeting today

RIDGEFIELD, Conn. and INDIANAPOLIS, Oct. 4, 2018 /PRNewswire/ -- Boehringer Ingelheim and Eli Lilly and Company (NYSE: LLY) today presented the full results of the long-term cardiovascular outcome trial, CARMELINA®, which studied the impact of Tradjenta® on cardiovascular safety and kidney outcomes in adults with type 2 diabetes at high risk for heart and/or kidney disease. The study met its primary endpoint, with Tradjenta demonstrating a similar cardiovascular safety profile compared with placebo when added to standard of care. The overall safety profile of Tradjenta in the trial, including adults with kidney disease, was consistent with previous data and no new safety signals were observed.

The full CARMELINA results were presented at the 54th European Association for the Study of Diabetes Annual Meeting in Berlin.

"Heart disease is a major complication and the leading cause of death for people living with type 2 diabetes. CARMELINA adds important new evidence for type 2 diabetes patients at high risk of heart and/or kidney disease, a population that has been underrepresented in other cardiovascular outcome trials with diabetes, but whom we see in our daily practice," commented Bernard Zinman, M.D., professor in the Department of Medicine, University of Toronto and senior scientist at the Lunenfeld-Tanenbaum Research Institute, Mount Sinai Hospital, Toronto, Canada.

In CARMELINA, cardiovascular events that contributed to the primary endpoint, defined as time to first occurrence of 3-P MACE (cardiovascular death, non-fatal myocardial infarction or non-fatal stroke), occurred in 12.4 percent (434 people) of the Tradjenta group compared with 12.1 percent (420 people) of the placebo group. CARMELINA also included a key secondary composite endpoint, with Tradjenta demonstrating a similar kidney safety profile compared with placebo. This secondary composite endpoint reflecting declining kidney function occurred in 9.4 percent (327 people) of the Tradjenta group compared with 8.8 percent (306 people) of the placebo group.

In CARMELINA, the risk of hospitalization for heart failure was examined as a pre-specified endpoint that was subject to adjudication.[†] Hospitalization for heart failure occurred in 6 percent (209 people) of the Tradjenta group compared with 6.5 percent (226) of the placebo group.

"Diabetes is a complex condition to manage and there remains a need for treatments with proven long-term cardiovascular and renal outcomes," said Thomas Seck, M.D., senior vice president, Medicine and Regulatory Affairs, Boehringer Ingelheim Pharmaceuticals, Inc. "The CARMELINA results reinforce confidence in Tradjenta as an effective and well-tolerated treatment and are particularly meaningful for those most vulnerable to serious complications, including heart failure and kidney disease."

"We have created a unique cardiovascular outcome trial program for Tradjenta with two trials – CARMELINA, the results of which are released today, as well as CAROLINA®, which will report initial results in the near future," added Jeff Emmick, M.D., Ph.D., vice president, Product Development, Lilly Diabetes. "This program will provide clinical data on the long-term safety profile of Tradjenta in a broad range of adults with type 2 diabetes, reflecting patients whom doctors see in their daily practice."

About CARMELINA (NCT01897532)

CARMELINA (CArdiovascular safety and Renal Microvascular outcomE with LINAgliptin in patients with type 2 diabetes at high vascular risk) is a multi-national, randomized, double-blind, placebo-controlled clinical trial that involved 6,979 adults with type 2 diabetes from 27 countries at more than 600 sites observed for a median duration of 2.2 years. The study was designed to assess the effect of Tradjenta (5 mg once daily) compared with placebo (both added to standard of care) on cardiovascular outcomes in adults with type 2 diabetes and high cardiovascular risk, the majority of whom also had kidney disease. This population of people with high risk of cardiovascular and/or kidney disease reflects patients that doctors see in their daily practice. Standard of care included both glucose lowering agents and cardiovascular drugs (including antihypertensive and lipid lowering agents).

CARMELINA was led by an academic trial steering committee and the Boehringer Ingelheim and Eli Lilly and Company Diabetes Alliance. Compared to other recently reported outcome trials of dipeptidyl peptidase-4 (DPP-4) inhibitors in type 2 diabetes, CARMELINA included the highest number of patients with impaired kidney function.[†]

To learn more about CARMELINA, please visit: <https://www.carmelinatrial.com/>

About our cardiovascular outcome trials

As cardiovascular disease is a major complication and the leading cause of death in type 2 diabetes, cardiovascular safety of all type 2 diabetes treatments is important. Worldwide, most people with type 2 diabetes die of a cardiovascular event. In 2015, Boehringer Ingelheim and Eli Lilly and Company announced results from the landmark cardiovascular outcome trial EMPA-REG OUTCOME® with the SGLT2 inhibitor empagliflozin.

CARMELINA is one of two cardiovascular outcome trials with the DPP-4 inhibitor Tradjenta. CAROLINA, will be the first DPP-4 inhibitor cardiovascular outcome trial to compare commonly used second line treatments — Tradjenta and the sulfonylurea glimepiride. This trial includes adults with relatively early type 2 diabetes and increased cardiovascular risk or established complications, with less than optimized blood sugar control. The majority did not yet have heart and kidney disease. The study will report initial results in the near future. CARMELINA and CAROLINA will provide clinical data on the

long-term safety profile of Tradjenta in a broad range of adults with type 2 diabetes, which reflects patients that doctors see in their daily practice.

What is TRADJENTA?

TRADJENTA is a prescription medicine that is used along with diet and exercise to lower blood sugar in adults with type 2 diabetes.

TRADJENTA is not for people with type 1 diabetes or for people with diabetic ketoacidosis (increased ketones in the blood or urine).

If you have had inflammation of the pancreas (pancreatitis) in the past, it is not known if you have a higher chance of getting pancreatitis while you take TRADJENTA.

IMPORTANT SAFETY INFORMATION

What is the most important information I should know about TRADJENTA?

Serious side effects can happen to people taking TRADJENTA, including inflammation of the pancreas (pancreatitis), which may be severe and lead to death. Before you start taking TRADJENTA, tell your doctor if you have ever had pancreatitis, gallstones, a history of alcoholism, or high triglyceride levels.

Stop taking TRADJENTA and call your doctor right away if you have pain in your stomach area (abdomen) that is severe and will not go away. The pain may be felt going from your abdomen through to your back. The pain may happen with or without vomiting. These may be symptoms of pancreatitis.

Heart failure. Heart failure means your heart does not pump blood well enough. Before you start taking TRADJENTA, tell your doctor if you have ever had heart failure or have problems with your kidneys. Contact your doctor right away if you have any of the following symptoms: increasing shortness of breath or trouble breathing, especially when you lie down; swelling or fluid retention, especially in the feet, ankles, or legs; an unusually fast increase in weight or unusual tiredness. These may be symptoms of heart failure.

Who should not take TRADJENTA?

Do not take TRADJENTA if you are allergic to linagliptin or any of the ingredients in TRADJENTA.

Symptoms of a serious allergic reaction to TRADJENTA may include rash, itching, flaking or peeling; raised red patches on your skin (hives); swelling of your face, lips, tongue, and throat that may cause difficulty breathing or swallowing. If you have any of these symptoms, stop taking TRADJENTA and call your doctor or go to the emergency room right away.

What should I tell my doctor before using TRADJENTA?

Tell your doctor about all your medical conditions, including if you have or have had inflammation of your pancreas (pancreatitis). Tell your doctor about all the medicines you take, including prescription and non-prescription medicines, vitamins, and herbal supplements. TRADJENTA may affect the way other medicines work, and other medicines may affect how TRADJENTA works. Especially tell your doctor if you take

- other medicines that can lower your blood sugar. If you take TRADJENTA with another medicine that can cause low blood sugar, such as sulfonylurea or insulin, your risk of getting low blood sugar is higher. The dose of your sulfonylurea or insulin may need to be lowered while you take TRADJENTA.
- rifampin (Rifadin®, Rimactane®, Rifater®, Rifamate®),* an antibiotic that is used to treat tuberculosis.

*These trademarks are owned by third parties not affiliated with TRADJENTA.

Tell your doctor if you are pregnant or planning to become pregnant or are breastfeeding or plan to breastfeed.

What are the possible side effects of TRADJENTA?

TRADJENTA may cause serious side effects, including

- Inflammation of the pancreas (pancreatitis).
- Low blood sugar (hypoglycemia), especially if you take TRADJENTA with another medicine that can cause low blood sugar. Signs and symptoms of low blood sugar may include headache, drowsiness, weakness, dizziness, confusion, irritability, hunger, fast heartbeat, sweating, or feeling jittery.
- Allergic (hypersensitivity) reactions can happen after your first dose or up to 3 months after starting TRADJENTA. Symptoms may include swelling of your face, lips, throat, and other areas on your skin; difficulty with swallowing or breathing; raised, red areas on your skin (hives); skin rash, itching, flaking, or peeling.
- Joint pain. Some people who take medicines called dipeptidyl peptidase-4 (DPP-4) inhibitors like TRADJENTA, may develop joint pain that can be severe. Call your doctor if you have severe joint pain.
- Skin Reaction. Some people who take medicines called DPP-4 inhibitors like TRADJENTA, may develop a skin reaction called bullous pemphigoid which can be serious and may need to be treated in a hospital. Tell your doctor right away if you develop blisters.

The most common side effects of TRADJENTA include stuffy or runny nose, sore throat, cough, and diarrhea.

These are not all the possible side effects of TRADJENTA. For more information, ask your doctor or pharmacist. **You are encouraged to report negative side effects of prescription drugs to the FDA. Visit www.fda.gov/medwatch or call 1-800-FDA-1088.**

Boehringer Ingelheim and Eli Lilly and Company

In January 2011, Boehringer Ingelheim and Eli Lilly and Company announced an alliance in diabetes that centers on compounds representing several of the largest diabetes treatment classes. The alliance leverages the strengths of two of the world's leading pharmaceutical companies. By joining forces, the companies demonstrate commitment in the care of people with diabetes and stand together to focus on patient needs. Find out more about the alliance at www.boehringer-ingelheim.com or www.lilly.com.

About Boehringer Ingelheim

Boehringer Ingelheim Pharmaceuticals, Inc., based in Ridgefield, Conn., is the largest U.S. subsidiary of Boehringer Ingelheim Corporation.

Boehringer Ingelheim is one of the world's top 20 pharmaceutical companies. Headquartered in Ingelheim, Germany, the company operates globally with approximately 50,000 employees. Since its founding in 1885, the company has remained family-owned and today creates value through innovation for three business areas including human pharmaceuticals, animal health and biopharmaceutical contract manufacturing.

Boehringer Ingelheim is committed to improving lives and providing valuable services and support to patients and their families. Our employees create and engage in programs that strengthen our communities. Please visit www.boehringer-ingelheim.us/csr to learn more about how we make more health through our Corporate Social Responsibility initiatives.

In 2017, Boehringer Ingelheim achieved net sales of about \$20.4 billion (18.1 billion euros). R&D expenditure corresponds to approximately \$3.4 billion (three billion euros), or 17.0 percent of its net sales.

For more information please visit www.boehringer-ingelheim.us, or follow us on Twitter @BoehringerUS.

About Lilly Diabetes

Lilly has been a global leader in diabetes care since 1923, when we introduced the world's first commercial insulin. Today we are building upon this heritage by working to meet the diverse needs of people with diabetes and those who care for them. Through research and collaboration, a wide range of therapies and a continued determination to provide real solutions—from medicines to support programs and more—we strive to make life better for all those affected by diabetes around the world. For more information, visit www.lillydiabetes.com.

About Eli Lilly and Company

Lilly is a global healthcare leader that unites caring with discovery to make life better for people around the world. We were founded more than a century ago by a man committed to creating high-quality medicines that meet real needs, and today we remain true to that mission in all our work. Across the globe, Lilly employees work to discover and bring life-changing medicines to those who need them, improve the understanding and management of disease, and give back to communities through philanthropy and volunteerism. To learn more about Lilly, please visit us at www.lilly.com and newsroom.lilly.com/social-channels.

This press release contains forward-looking statements (as that term is defined in the Private Securities Litigation Reform Act of 1995) about Tradjenta and its safety profile, and reflects Lilly's current belief. However, as with any pharmaceutical product, there are substantial risks and uncertainties in the process of development and commercialization. Among other things, there can be no guarantee that future study results will be consistent with the results to date or that Tradjenta will receive additional regulatory approvals. For further discussion of these and other risks and uncertainties, see Lilly's most recent Form 10-K and Form 10-Q filings with the United States Securities and Exchange Commission. Except as required by law, Lilly undertakes no duty to update forward-looking statements to reflect events after the date of this release.

Tradjenta[®], CARMELINA[®] and CAROLINA[®] are registered trademarks of Boehringer Ingelheim.

P-LLY
MPR-US-100568

CONTACT:

Jennifer Forsyth
Director, Public Relations
Boehringer Ingelheim Pharmaceuticals, Inc.
Email: jennifer.forsyth@boehringer-ingelheim.com
Phone: (203) 791-5889

Gregory Kueterman

Director of Communications
Lilly Diabetes and Lilly USA
Email: kueterman_gregory_andrew@lilly.com
Phone: (317) 432-5195

* Assessed by an independent clinical event committee in a blinded way

† Glomerular filtration rate below 30 mL/min/m²



The Lilly logo is written in a vibrant red, cursive script. The letters are fluid and interconnected, with a prominent 'L' at the beginning and a long, sweeping tail on the 'y'.

 View original content to download multimedia: <http://www.prnewswire.com/news-releases/boehringer-ingenelheim-and-lilly-present-full-results-of-tradjentas-carmelina-cardiovascular-outcome-trial-300724218.html>

SOURCE Eli Lilly and Company; Boehringer Ingelheim