Medicines & Healthcare products
Regulatory Agency

Public Assessment Report

National Procedure

Empagliflozin 10 mg Film-coated Tablets
Empagliflozin 25 mg Film-coated Tablets

empagliflozin

PL 21880/0355 - 0356

MEDREICH PLC

LAY SUMMARY

Empagliflozin 10 mg and 25 mg Film-coated Tablets
empagliflozin

This is a summary of the Public Assessment Report (PAR) for Empagliflozin 10 mg and 25 mg Film-coated Tablets. It explains how these products were assessed and their authorisation recommended, as well as their conditions of use. It is not intended to provide practical advice on how to use these products.

These products will be referred to as Empagliflozin Tablets in this lay summary for ease of reading.

For practical information about using Empagliflozin Tablets, patients should read the Patient Information Leaflet (PIL) or contact their doctor or pharmacist.

What are Empagliflozin Tablets and what are they used for?
These products are generic medicines. This means that these medicines are the same as, and considered interchangeable with, reference medicines already authorised, called Jardiance 10 mg and 25 mg film-coated tablets.

Empagliflozin Tablets are used in the treatment of type II diabetes mellitus, heart failure and chronic kidney disease.

Type 2 diabetes mellitus
Type 2 diabetes is a disease that comes from both genes and lifestyle. If patients have type 2 diabetes, their pancreas does not make enough insulin to control the level of glucose in the blood, and the body is unable to use its own insulin effectively. This results in high levels of glucose in the blood which can lead to medical problems like heart disease, kidney disease, blindness, and poor circulation in the limbs.

Empagliflozin tablets is used to treat type 2 diabetes in adults and children aged 10 years and older that cannot be controlled by diet and exercise alone. Empagliflozin tablets can be used without other medicines in patients who cannot take metformin (another diabetes medicine). Empagliflozin tablets can also be used with other medicines for the treatment of diabetes. These may be medicines taken by mouth or given by injection such as insulin.

This medicine can also help prevent heart disease in patients with type 2 diabetes mellitus. It is important that patients continue with the diet and exercise plan as told by their doctor, pharmacist or nurse.

Empagliflozin tablets works by blocking the SGLT2 protein in the kidneys. This causes blood sugar (glucose) to be removed in urine. Thereby Empagliflozin tablets lower the amount of sugar in the blood.

Heart failure
Heart failure occurs when the heart is too weak or stiff and cannot work properly. This can lead to serious medical problems and need for hospital care. The most common symptoms of heart failure are feeling breathless, feeling tired or very tired all the time, and ankle swelling. Empagliflozin tablets helps protect the heart from getting weaker and improves symptoms.

Empagliflozin tablets are used to treat heart failure in adult patients with symptoms due to impaired heart function.

Chronic kidney disease
Chronic kidney disease is a long-term condition. It might be caused by other diseases such as diabetes and high blood pressure or even by the patient's own immune system attacking the kidneys. When people have chronic kidney disease, their kidneys may gradually lose their ability to clean and filter the blood properly. This can lead to serious medical problems such as swollen legs, heart failure or need for hospital care. Empagliflozin tablets helps protect the kidneys from losing their function.

Empagliflozin tablets are used to treat chronic kidney disease in adult patients.

How do Empagliflozin Tablets work?
Empagliflozin tablets contain the active substance empagliflozin. Empagliflozin is a member of a group of medicines called sodium glucose co-transporter-2 (SGLT2) inhibitors.

How are Empagliflozin Tablets used?
The pharmaceutical form of these medicines is film-coated tablets and the route of administration is oral (by mouth). Patients should swallow the tablet whole with water. The tablet can be taken with or without food and at any time of the day. However, patients should try to take it at the same time each day. This will help them to remember to take it.

The recommended dose of Empagliflozin tablets are one 10 mg tablet once a day.

If the patients has type 2 diabetes mellitus, their doctor will decide whether to increase the dose to 25 mg once a day, if needed to help to control blood sugar. The doctor may prescribe Empagliflozin tablets together with another diabetes medicine. Patients should remember to take all medicines as directed by their doctor to achieve the best results for their health. Appropriate diet and exercise help the body use its blood sugar better. It is important to stay on the diet and exercise program recommended by the patient's doctor while taking Empagliflozin tablets.

The patient's doctor may limit the dose to 10 mg once a day if the patient has a kidney problem.

The doctor will prescribe the strength that is right for the patient. Patients should not change the dose unless the doctor has told them to do so.

For further information on how Empagliflozin Tablets are used, refer to the PIL and Summaries of Product Characteristics (SmPCs) available on the Medicines and Healthcare products Regulatory Agency (MHRA) website.

These medicines can only be obtained with a prescription.

The patient should always take this medicine exactly as their doctor/pharmacist has told them. The patient should check with their doctor or pharmacist if they are not sure.

What benefits of Empagliflozin Tablets have been shown in studies?
Because Empagliflozin Tablets are generic medicines, studies in healthy volunteers have been limited to tests to determine that it is bioequivalent to the reference medicine. Two

medicines are bioequivalent when they produce the same levels of the active substance in the body.

What are the possible side effects of Empagliflozin Tablets?

For the full list of all side effects reported with these medicines, see Section 4 of the PIL or the SmPCs available on the MHRA website.

If a patient gets any side effects, they should talk to their doctor, pharmacist or nurse. This includes any possible side effects not listed in the product information or the PIL that comes with the medicine. Patients can also report suspected side effects themselves, or a report can be made on their behalf by someone else who cares for them, directly via the Yellow Card scheme at https://yellowcard.mhra.gov.uk or search for 'MHRA Yellow Card' online. By reporting side effects, patients can help provide more information on the safety of this medicine.

Because Empagliflozin Tablets are generic medicines and are bioequivalent to the reference medicines, their benefits and possible side effects are considered to be the same as the reference medicines.

Why were Empagliflozin Tablets approved?

It was concluded that, Empagliflozin Tablets have been shown to be comparable to and bioequivalent to the reference medicines. Therefore, the MHRA decided that, as for the reference medicines, the benefits are greater than the risks and recommended that these products can be approved for use.

What measures are being taken to ensure the safe and effective use of Empagliflozin Tablets?

As for all newly-authorised medicines, a Risk Management Plan (RMP) has been developed for Empagliflozin Tablets. The RMP details the important risks of Empagliflozin Tablets, how these risks can be minimised, any uncertainties about Empagliflozin Tablets (missing information), and how more information will be obtained about the important risks and uncertainties.

The following safety concerns have been recognised for Empagliflozin Tablets:

List of important risks and missing information	
Important Identified Risk	None
Important Potential Risk	• Urinary tract carcinogenicity • Pancreatitis
Missing Information	None

The information included in the SmPC and the PIL is compiled based on the available quality, non-clinical and clinical data, and includes appropriate precautions to be followed by healthcare professionals and patients. Side effects of Empagliflozin Tablets are continuously monitored and reviewed including all reports of suspected side-effects from patients, their carers, and healthcare professionals.

An RMP and a summary of the pharmacovigilance system have been provided with these applications and are satisfactory.

Other information about Empagliflozin Tablets

Marketing Authorisations for Empagliflozin Tablets were granted in the United Kingdom (UK) on 22 October 2025.

The full PAR for Empagliflozin Tablets follows this summary.

This summary was last updated in December 2025.

TABLE OF CONTENTS

I INTRODUCTION

Based on the review of the data on quality, safety and efficacy, the Medicines and Healthcare products Regulatory Agency (MHRA) considered that the applications for Empagliflozin 10 mg and 25 mg Film-coated Tablets (PL 21880/0355 - 0356) could be approved.

The products are approved for the following indications.

- Type 2 diabetes mellitus
  Empagliflozin is indicated in adults and children aged 10 years and above for the treatment of insufficiently controlled type 2 diabetes mellitus as an adjunct to diet and exercise:
  - as monotherapy when metformin is considered inappropriate due to intolerance
  - in addition to other medicinal products for the treatment of diabetes

- Heart failure
  Empagliflozin is indicated in adults for the treatment of symptomatic chronic heart failure.

- Chronic kidney disease
  Empagliflozin is indicated in adults for the treatment of chronic kidney disease.

For more information on the indications, see the Summary of Product Characteristics available on the MHRA website.

Empagliflozin is a reversible, highly potent (IC50 of 1.3 nmol) and selective competitive inhibitor of sodium-glucose co-transporter 2 (SGLT2). Empagliflozin does not inhibit other glucose transporters important for glucose transport into peripheral tissues and is 5 000 times more selective for SGLT2 versus SGLT1, the major transporter responsible for glucose absorption in the gut. SGLT2 is highly expressed in the kidney, whereas expression in other tissues is absent or very low. It is responsible, as the predominant transporter, for the reabsorption of glucose from the glomerular filtrate back into the circulation. In patients with type 2 diabetes and hyperglycaemia a higher amount of glucose is filtered and reabsorbed.

Empagliflozin improves glycaemic control in patients with type 2 diabetes by reducing renal glucose reabsorption. The amount of glucose removed by the kidney through this glucuretic mechanism is dependent on blood glucose concentration and GFR. Inhibition of SGLT2 in patients with type 2 diabetes and hyperglycaemia leads to excess glucose excretion in the urine. In addition, initiation of empagliflozin increases excretion of sodium resulting in osmotic diuresis and reduced intravascular volume.

In patients with type 2 diabetes, urinary glucose excretion increased immediately following the first dose of empagliflozin and is continuous over the 24 hour dosing interval. Increased urinary glucose excretion was maintained at the end of the 4-week treatment period, averaging approximately 78 g/day. Increased urinary glucose excretion resulted in an immediate reduction in plasma glucose levels in patients with type 2 diabetes.

Empagliflozin improves both fasting and post-prandial plasma glucose levels. The mechanism of action of empagliflozin is independent of beta cell function and insulin pathway and this contributes to a low risk of hypoglycaemia. Improvement of surrogate

markers of beta cell function including Homeostasis Model Assessment-β (HOMA-β) was noted.
In addition, urinary glucose excretion triggers calorie loss, associated with body fat loss and body weight reduction. The glucosuria observed with empagliflozin is accompanied by diuresis which may contribute to sustained and moderate reduction of blood pressure.

Empagliflozin also reduces sodium reabsorption and increases the delivery of sodium to the distal tubule. This may influence several physiological functions including but not restricted to increasing tubuloglomerular feedback and reducing intraglomerular pressure, lowering both pre- and afterload of the heart, downregulating of sympathetic activity and reducing left ventricular wall stress as evidenced by lower NT-proBNP values which may have beneficial effects on cardiac remodeling, filling pressures and diastolic function as well as preserving kidney structure and function. Other effects such as an increase in haematocrit, a reduction in body weight and blood pressure may further contribute to the beneficial cardiac and renal effects.

These applications were approved under Regulation 51B of The Human Medicines Regulation 2012, as amended (previously Article 10(1) of Directive 2001/83/EC, as amended), as generic medicines of suitable originator medicinal products, Jardiance 10 mg and 25 mg film-coated tablets that has been licensed for suitable time, in line with the legal requirements.

No new non-clinical studies were conducted, which is acceptable given that the applications are for generic medicinal products of suitable reference products.

With the exception of the bioequivalence study, no new clinical studies were conducted, which is acceptable given that the applications are for generic medicinal products of suitable reference products. The bioequivalence study was conducted in-line with current Good Clinical Practice (GCP).

The MHRA has been assured that acceptable standards of Good Manufacturing Practice (GMP) are in place for these products at all sites responsible for the manufacture, assembly and batch release of these products.

A Risk Management Plan (RMP) and a summary of the pharmacovigilance system have been provided with these applications and are satisfactory.

Marketing Authorisations for Empagliflozin 10 mg and 25 mg Film-coated Tablets were granted in the United Kingdom (UK) on 22 October 2025.

II QUALITY ASPECTS

II.1 Introduction

These products consist of 10 mg and 25 mg of empagliflozin.

In addition to empagliflozin, these products also contain the excipients:

- tablet core: lactose monohydrate, microcrystalline cellulose, hydroxypropylcellulose, croscarmellose sodium, colloidal anhydrous silica, magnesium stearate
- film-coating: rice starch, isomalt (E953), HPMC 2910/hypromellose (E464), medium chain triglycerides, Iron oxide yellow (E172).

The finished products are packaged in:

- PVC/Aluminium unit dose blisters. The Pack sizes are 7 x 1, 10 x 1, 14 x 1, 28 x 1, 30 x 1, 60 x 1, 70 x 1, 90 x 1, and 100 x 1 film-coated tablets.
- HDPE Bottles pack of 100 film-coated tablets.

Not all pack sizes may be marketed.

Satisfactory specifications and Certificates of Analysis have been provided for all packaging components. All primary packaging complies with the current regulations concerning materials in contact with food.

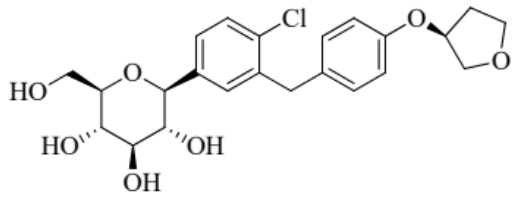
II.2 ACTIVE SUBSTANCE

rINN: empagliflozin

Chemical Name: D-Glucitol,1,5-anhydro-1-C-[4-chloro-3-[[4-[[(3S)tetrahydro-3-furanyl]oxy]phenyl]methyl]phenyl]-,(1S)

Molecular Formula: $C_{23}H_{27}ClO_7$

Chemical Structure:



Molecular Weight: 450.9

Appearance: White to yellowish powder

Solubility: Sparingly soluble in methanol, slightly soluble in ethanol, practically insoluble in water and toluene

The information related to the active substance was provided in an ASMF.

Synthesis of the active substance from the designated starting materials has been adequately described and appropriate in-process controls and intermediate specifications are applied. Satisfactory specifications are in place for all starting materials and reagents, and these are supported by relevant Certificates of Analysis.

Appropriate proof-of-structure data have been supplied for the active substance. All potential known impurities have been identified and characterised.

An appropriate specification is provided for the active substance. Analytical methods have been appropriately validated and are satisfactory for ensuring compliance with the relevant specification. Batch analysis data are provided and comply with the proposed specification. Satisfactory Certificates of Analysis have been provided for all working standards.

Suitable specifications have been provided for all packaging used. The primary packaging complies with the current regulations concerning materials in contact with food.

Appropriate stability data have been generated supporting suitable retest period when stored in the proposed packaging.

II.3 DRUG PRODUCTS

Pharmaceutical development

A satisfactory account of the pharmaceutical development was provided.

Comparative *in vitro* dissolution and impurity profiles were provided for the proposed and reference products.

All excipients comply with either their respective European/national monographs, or suitable in-house specification. Satisfactory Certificates of Analysis were provided for all excipients.

With the exception of lactose monohydrate, no excipients of animal or human origin are used in the final products. The supplier of lactose monohydrate has confirmed that it is sourced from healthy animals under the same conditions as milk for human consumption.

Confirmation has been given that the magnesium stearate used in the tablets is of vegetable origin.

These products do not contain or consist of genetically modified organisms (GMO).

Manufacture of the products

A description and flow-chart of the manufacturing method has been provided.

Satisfactory batch formulation data have been provided for the manufacture of the products, along with an appropriate account of the manufacturing process. The manufacturing process has been validated and has shown satisfactory results.

Finished Product Specifications

The finished product specifications at release and shelf-life are satisfactory. The test methods have been described and adequately validated. Batch data have been provided that comply with the release specifications. Certificates of Analysis have been provided for any working standards used.

Stability

Finished product stability studies have been conducted in accordance with current guidelines, using batches of the finished product stored in the packaging proposed for marketing. Based on the results, a shelf-life of 30 months (2 and a half years), with no special storage conditions is acceptable.

Suitable post approval stability commitments have been provided to continue stability testing on batches of finished product.

II.4 Discussion on chemical, pharmaceutical and biological aspects

The grant of marketing authorisations were recommended.

III NON-CLINICAL ASPECTS

III.1 Introduction

As the pharmacodynamic, pharmacokinetic and toxicological properties of empagliflozin are well-known, no new non-clinical studies are required, and none have been provided. An overview based on the literature review is, thus, appropriate.

III.2 Pharmacology

No new pharmacology data were provided, and none were required for these applications.

III.3 Pharmacokinetics

No new pharmacokinetic data were provided, and none were required for these applications.

III.4 Toxicology

No new toxicology data were provided, and none were required for these applications.

III.5 Ecotoxicity/Environmental Risk Assessment

Suitable justification was provided for non-submission of an Environmental Risk Assessment. As the applications are for generic versions of already authorised products, an increase in environmental exposure is not anticipated following approval of the marketing authorisations for the proposed products.

III.6 Discussion on the non-clinical aspects

The grant of marketing authorisations were recommended.

IV CLINICAL ASPECTS

IV.1 Introduction

The clinical pharmacology, efficacy and safety of empagliflozin are well-known. With the exception of data from bioequivalence study 62422, no new clinical data are provided or are required for this type of application. An overview based on a literature review and a review of this study is, thus, satisfactory.

IV. 2 Pharmacokinetics

In support of the application, the applicant submitted the following.

Bioequivalence Study (25 mg, single dose, fasted)

This study was an open label, balanced, randomized, two-treatment, two-period, two-sequence, single-dose, crossover oral bioequivalence study comparing the test product Empagliflozin Tablets 25 mg versus the reference product Jardiance (empagliflozin) 25 mg Film Coated Tablets in healthy adult subjects under fasting conditions.

In each period, after an overnight fast of at least 10.00 hours, subjects were received a single oral dose of either the test or reference product according to the randomisation schedule. Blood samples were taken pre-dose and up to 48 hours post dose, with a washout period of 8 days between the treatment periods.

A summary of the pharmacokinetic results is presented below:

Statistical Summary									
Parameter	Least square Geo Means				T/R Ratio (%)	90% Confidence Intervals		Power (%)	Intra subject CV (%)
	Test (T)	N	Reference (R)	N		Lower (%)	Upper (%)		
C_{max} (ng/mL)	328.56	28	330.82	28	99.32	94.03	104.91	100.00	12.1
AUC_{0-t} (hr*ng/mL)	3346.34	28	3251.88	28	102.90	99.56	106.36	100.00	7.3
AUC_{0-inf} (hr*ng/mL)	3429.81	28	3335.59	28	102.82	99.57	106.19	100.00	7.1

In accordance with the regulatory requirements, the Test/Reference ratios and their 90% confidence intervals were within the specified limits to show bioequivalence between the test product and the reference product.

As the additional 10 mg strength of the product meet the biowaiver criteria specified in the current bioequivalence guideline, the results and conclusions from the bioequivalence study on the 25 mg product strength can be extrapolated to the 10 mg product strength.

IV.3 Pharmacodynamics

No new pharmacodynamic data were submitted for these applications and none were required.

IV.4 Clinical efficacy

No new efficacy data were submitted with these applications and none were required.

IV.5 Clinical safety

The safety data from the bioequivalence study showed that the test and reference products were equally well tolerated. No new or unexpected safety issues were raised from the bioequivalence study.

IV.6 Risk Management Plan (RMP)

The applicant has submitted an RMP, in accordance with the requirements of Regulation 182 of The Human Medicines Regulation 2012, as amended. The applicant proposes only routine pharmacovigilance and routine risk minimisation measures for all safety concerns. This is acceptable.

IV.7 Discussion on the clinical aspects

The grant of marketing authorisations were recommended for these applications.

V USER CONSULTATION

A full colour mock-up of the Patient Information Leaflet (PIL) was provided with the application in accordance with legal requirements, including user consultation.

VI OVERALL CONCLUSION, BENEFIT/RISK ASSESSMENT AND RECOMMENDATION

The quality of the products is acceptable, and no new non-clinical or clinical safety concerns have been identified. Extensive clinical experience with empagliflozin is considered to have demonstrated the therapeutic value of the compound. The benefit/risk is, therefore,

considered to be positive.
The Summaries of Product Characteristics (SmPCs), Patient Information Leaflet (PIL) and labelling are satisfactory, in line with current guidelines and consistent with the reference products.

In accordance with legal requirements, the current approved UK version of the SmPCs and PIL for these products are available on the MHRA website.

TABLE OF CONTENT OF THE PAR UPDATE

Steps taken after the initial procedure with an influence on the Public Assessment Report (non-safety variations of clinical significance).

Please note that only non-safety variations of clinical significance are recorded below and in the annexes to this PAR. The assessment of safety variations where significant changes are made are recorded on the MHRA website or European Medicines Agency (EMA) website. Minor changes to the marketing authorisation are recorded in the current SmPC and/or PIL available on the MHRA website.

Application type	Scope	Product information affected	Date of grant	Outcome	Assessment report attached Y/N