

## **SUMMARY OF PRODUCT CHARACTERISTICS**

▼ This medicinal product is subject to additional monitoring. This will allow quick identification of new safety information. Healthcare professionals are asked to report any suspected adverse reactions. See section 4.8 for how to report adverse reactions.

### **1 NAME OF THE MEDICINAL PRODUCT**

Iqirvo 80 mg film-coated tablets

### **2 QUALITATIVE AND QUANTITATIVE COMPOSITION**

Each film-coated tablet contains 80 mg of elafibranor as active ingredient.

For the full list of excipients, see section 6.1.

### **3 PHARMACEUTICAL FORM**

Film-coated tablets (tablets)

The tablets are round, orange, approximately 8 mm diameter, debossed with 'ELA 80' on one side.

### **4 CLINICAL PARTICULARS**

#### **4.1 Therapeutic indications**

Iqirvo is indicated for the treatment of primary biliary cholangitis (PBC) in combination with ursodeoxycholic acid (UDCA) in adults with an inadequate response to UDCA, or as monotherapy in adults unable to tolerate UDCA.

## 4.2 Posology and method of administration

### Posology

The recommended dose is 80 mg once daily with or without food.

### Special populations

#### *Elderly patients (65 years of age and above)*

No dose adjustment is necessary in patients older than 65 years of age (see section 5.2).

#### *Renal impairment*

No dose adjustment is necessary in patients with renal impairment (see section 5.2).

#### *Hepatic impairment*

Prior to initiation of treatment with Elafibranor the patient's hepatic status must be known.

No dose adjustment is necessary in patients with mild (Child-Pugh A) or moderate (Child-Pugh B) hepatic impairment. Whether the patient has decompensated cirrhosis (including Child-Pugh C) or has had a prior decompensation event should be determined prior to initiation of treatment because the safety and efficacy of elafibranor have not been established in patients with PBC with severe hepatic impairment. Use in patients with severe hepatic impairment (Child-Pugh C) is not recommended (see section 5.2).

#### *Paediatric population*

There is no relevant use of elafibranor in the paediatric population (below 18 years of age) for the indication of PBC.

#### *Missed dose*

If a dose of elafibranor is missed, the patient should not take the missed dose and instead take their subsequent dose at the next scheduled time point. The patient should not take a double dose to make up for the missed dose.

### Method of administration

For oral use.

Take one tablet once daily. The tablet should not be crushed, chewed or split prior to administration.

### **4.3 Contraindications**

Hypersensitivity to the active substance or to any of the excipients listed in section 6.1.

### **4.4 Special warnings and precautions for use**

#### Liver related events

Increases in liver biochemical tests including transaminases and bilirubin increase levels have been reported in 3.7% of participants receiving elafibranor compared to 5.7% of participants receiving placebo.

Clinical and laboratory assessment of liver function should be done prior to initiation of elafibranor treatment and thereafter according to routine patient management.

If increases in liver biochemical tests and/or liver dysfunction are observed, prompt investigation of the cause is recommended and interruption of elafibranor treatment should be considered.

#### Elevated blood creatine phosphokinase and muscle injury

Increases in blood creatine phosphokinase (CPK) have been reported in participants receiving elafibranor (see section 4.8) (3.7% in elafibranor group compared to 0% in placebo group). In addition to these reported CPK increases, there was one case of rhabdomyolysis which occurred in the pivotal phase 3 ELATIVE study in a participant with cirrhosis and ongoing treatment with an HMG-CoA reductase inhibitor. CPK should be evaluated prior to initiation of elafibranor treatment to determine the baseline CPK level and thereafter, according to the routine patient management. Caution should be used in patients with predisposing factors including old age (>65 years), hypothyroidism, personal or familial history of hereditary muscular disorders, severe infection, trauma, surgery, disturbances of hormone or electrolyte imbalance or alcohol abuse. Periodic CPK measurements may be considered in patients starting elafibranor treatment, especially those on concomitant HMG-CoA reductase inhibitors. Patients on elafibranor treatment should be advised to report promptly any unexplained muscle symptoms such as pain, soreness, or weakness to their treating physician, especially if accompanied by malaise or fever. If increases in CPK or unexplained signs and symptoms of muscle injury are observed, prompt investigation of the cause is recommended and interruption of elafibranor treatment should be considered (see section 4.8), and levels monitored as per standard medical practise.

#### Embryo-Foetal Toxicity

Based on data from animal studies, elafibranor may cause foetal harm when administered to a pregnant woman. Patients should be informed of the potential risk to the foetus if elafibranor is taken during pregnancy (see section 4.6).

The use of elafibranor is not recommended during pregnancy and in women of childbearing potential not using effective contraception (see section 4.6). The

pregnancy status of women of childbearing potential should be checked prior to initiation of elafibranor treatment.

Women of childbearing potential should be advised to use effective contraception during treatment and for 3 weeks following the final dose of elafibranor.

#### Hypersensitivity Reactions

If severe hypersensitivity reactions occur, permanently discontinue Iqirvo. If a mild or moderate hypersensitivity reaction occurs, stop Iqirvo and treat promptly then continue with the follow up until resolution of the signs and symptoms.

#### Fractures

Fractures occurred in 6% of Iqirvo-treated patients compared to no placebo-treated patients.

Consider the risk of fracture in the care of patients treated with Iqirvo and monitor bone health according to current standards of care.

#### Elderly (over 80 years)

There is no supporting data on using Elafibranor in those over 80 years of age.

#### Interaction with fibrates

Fibrates and elafibranor act on some similar pathways. Due to the potential for pharmacodynamic interactions and the exclusion of concomitant fibrate use in clinical studies, data on their combined use is limited. Therefore, concomitant administration is not recommended.

This medicinal product contains less than 1 mmol sodium (23 mg) per dose, that is to say essentially 'sodium-free'.

### **4.5 Interaction with other medicinal products and other forms of interaction**

Based on in vitro and in vivo studies, no clinically relevant drug-drug interaction is expected by co-administering elafibranor with any other medicinal products (see section 5.2).

### **4.6 Fertility, pregnancy and lactation**

#### Fertility

No human data on the effect of elafibranor on fertility are available. Animal studies do not indicate any direct or indirect effects on fertility or the ability to reproduce (see section 5.3).

#### Women of childbearing potential/contraception

Elafibranor is not recommended in women of childbearing potential not using effective contraception because of potential harm to the foetus.

Women of childbearing potential should continue to use effective contraception during and up to at least for 3 weeks following the final dose of elafibranor. The pregnancy status of patients of childbearing potential should be checked prior to initiation of elafibranor treatment.

Women planning to become pregnant are recommended to consult with their physician regarding alternate treatment options (see section 4.4 and 5.3).

#### Pregnancy

There is limited amount of data from the use of elafibranor in pregnant women.

Studies in pregnant animals have shown reproductive toxicity (see section 5.3).

Elafibranor is not recommended during pregnancy.

#### Lactation

It is unknown whether elafibranor or its metabolites are excreted in human milk. A risk to the suckling child cannot be excluded. (see section 5.3).

Elafibranor should not be used during breastfeeding and for at least 3 weeks following last dose of elafibranor.

### **4.7 Effects on ability to drive and use machines**

Elafibranor has no influence on the ability to drive and use machines.

### **4.8 Undesirable effects**

#### Summary of the safety profile

In the pivotal phase 3 ELATIVE study, 161 participants were randomised in a 2:1 ratio to receive elafibranor 80 mg (n=108) or placebo (n=53) for at least 52 weeks. At the end of the double-blind (DB) period of the study, the median duration of exposure was 63.07 and 61.00 weeks in the elafibranor and placebo groups, respectively.

The most commonly reported adverse drug reactions associated with elafibranor in more than 10% of participants (n=108) were abdominal pain (11.1%), diarrhoea (11.1%), nausea (11.1%) and vomiting (11.1%). These were non-serious and mild to moderate in severity.

The most common adverse drug reaction leading to treatment discontinuation was blood CPK increased (3.7%).

#### Tabulated list of adverse reactions

Within the system organ class, the adverse reactions are listed by frequency using the following categories: very common ( $\geq 1/10$ ), common ( $\geq 1/100$  to  $< 1/10$ ), uncommon ( $\geq 1/1\ 000$  to  $< 1/100$ ), rare ( $\geq 1/10\ 000$  to  $< 1/1\ 000$ ), very rare ( $< 1/10\ 000$ ), not known (cannot be estimated from the available data).

<b>System Organ Class</b>	<b>Very common (<math>\geq 1/10</math>)</b>	<b>Common (<math>\geq 1/100</math> to &lt;1/10)</b>	<b>Uncommon (<math>\geq 1/1\ 000</math> to &lt;1/100)</b>
Nervous system disorders		Headache	
Gastrointestinal disorders	Abdominal pain <sup>a</sup> Diarrhoea Nausea Vomiting	Constipation	
Hepatobiliary disorders		Cholelithiasis	
Skin and subcutaneous tissue disorders			Rash pruritic
Musculoskeletal and connective tissue disorders		Myalgia	
Investigations		Blood CPK increased	Blood creatinine increased

<sup>a</sup> includes abdominal pain upper and abdominal pain lower

#### Description of selected adverse reactions

Nine (8.3%) participants in the elafibranor group and 6 (11.3%) participants in the placebo group experienced headache. However, within the first 10 days of study treatment, more participants in the elafibranor group experienced headache compared to the placebo group (3.7% compared to 0% respectively).

Four (3.7%) participants in the elafibranor group and no participants in the placebo group had clinically significant blood CPK increase, leading to drug discontinuation. In 2 of the 4 participants, the CPK was  $> 5$  x upper limit of normal (ULN). All events were non-serious and mild to moderate in intensity. Two of the participants also experienced associated symptom of myalgia. At baseline, mean CPK values were similar between the treatment groups and within normal range; values at Week 52

remained within normal range in both groups. The mean change from baseline at Week 52 was 6.2 (38.1) U/L in the elafibranor group and 12.3 (67.0) U/L in the placebo group.

#### Post-marketing experience

Not applicable

#### Paediatric population

Not applicable

#### Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via the Yellow Card Scheme. Website: [www.mhra.gov.uk/yellowcard](http://www.mhra.gov.uk/yellowcard) or search for MHRA Yellow Card in the Google Play or Apple App Store.

## **4.9 Overdose**

In the event of suspected overdose, patients should be carefully observed, and appropriate symptomatic treatment and supportive care should be initiated.

#### Paediatric population

Not applicable

## **5 PHARMACOLOGICAL PROPERTIES**

### **5.1 Pharmacodynamic properties**

Pharmacotherapeutic group: Bile and liver therapy, Other drugs for bile therapy

ATC code: A05AX06

#### Mechanism of action

Elafibranor and its main active metabolite GFT1007 are dual peroxisome proliferator-activated receptor (PPAR) $\alpha/\delta$  agonists.

Activation of PPAR $\alpha$  decreases bile acid (BA) synthesis, increases BA detoxification, and modulates BA output, resulting in decreased bile toxicity, and less injury to cholangiocytes and hepatocytes.

Activation of PPAR $\delta$  also regulates transporters that absorb and secrete bile components, contributing this way to decreased bile toxicity and improving cholestasis.

Activation of PPAR $\alpha$  and PPAR $\delta$  also has anti-inflammatory effects by acting on different pathways of inflammation, nuclear factor kappa B (NF- $\kappa$ B) and B-cell lymphoma 6 (BCL6) pathways, respectively.

#### Pharmacodynamic effects

In the pivotal phase 3 ELATIVE study, treatment with elafibranor resulted in a marked reduction from baseline in alkaline phosphatase (ALP) as early as 4 weeks which was sustained through week 52. In alignment with the observed biochemical response, greater reductions in biomarkers of BA synthesis including the BA precursor 7  $\alpha$ -hydroxy-4-cholesten-3-one (C4) and Fibroblast Growth Factor-19 (FGF-19), a BA synthesis regulator, were observed with elafibranor treatment. Significant decreases in Immunoglobulin M (IgM), Immunoglobulin G (IgG), and anti-inflammatory markers, were observed in participants treated with elafibranor compared to placebo in alignment with the in vitro demonstration of anti-inflammatory properties of elafibranor.

In vitro studies in human macrophages, monocytes and endothelial cells showed the capacity of elafibranor and/or GFT1007 to decrease the secretion of inflammatory markers such as Monocyte Chemoattractant Protein-1 (MCP-1) and Interleukin-6 (IL-6) through combined PPAR $\alpha$  and PPAR $\delta$  activation and parallel PPAR-independent mechanisms.

Anti-fibrotic properties of elafibranor were demonstrated in human primary hepatic stellate cells (hHSCs), pivotal for fibrogenesis in the liver. Elafibranor inhibits Platelet-Derived Growth Factor (PDGF)-stimulated hHSC proliferation in a dose-dependent manner via modulation of PDGFR $\beta$  phosphorylation. Additionally, elafibranor inhibits Transforming Growth Factor Beta (TGF $\beta$ 1)-induced hHSC activation at the gene level, by down-regulating, in a dose-dependent manner, the expression of several fibrosis markers, such as  $\alpha$  Smooth Muscle Actin ( $\alpha$ SMA), Collagen 1  $\alpha$  1 (Col1 $\alpha$ 1) and Collagen 4  $\alpha$  1 (Col4 $\alpha$ 1), but without inhibiting the kinase activity of the TGF $\beta$ 1 receptors.

#### Cardiac electrophysiology

Thorough QT (TQT) analysis excluded any prolongation effect of elafibranor on QT/QTc interval at repeat doses of up to 300 mg for 14 days.

In clinical studies, no clinically meaningful changes in vital signs or in electrocardiogram (ECG) (including QTc interval) were observed in participants treated with elafibranor.

#### Clinical efficacy



The efficacy of elafibranor was evaluated in Study GFT505B-319-1 (ELATIVE), a phase 3, randomised, DB, placebo-controlled study followed by an open-label long-term extension (OLE) in 161 adults with PBC with an inadequate response or intolerance to UDCA. Participants were randomised in a 2:1 ratio to receive elafibranor 80 mg or placebo once daily for at least 52 weeks. When applicable, participants continued their pre-study dose of UDCA throughout the study. Participants were included in the study if their ALP was  $\geq 1.67 \times \text{ULN}$  and total bilirubin (TB) was  $\leq 2 \times \text{ULN}$ . Participants were excluded in case of decompensated cirrhosis or other causes of liver disease.

Overall, the mean age was 57.1 years, and the mean weight was 70.8 kg. The study population was predominately female (96%) and white (91%). The baseline mean ALP concentration was 321.9 U/L and 39% of participants had a baseline ALP concentration  $> 3 \times \text{ULN}$ .

The mean baseline TB concentration was 9.6  $\mu\text{mol/L}$  and 96% of participants had a baseline TB concentration less than or equal to ULN. The mean baseline liver stiffness measurement (LSM) by transient elastography was 10.1 kPa. The baseline mean PBC Worst Itch Numeric Rating Scale (NRS) score was 3.3 and 41% had moderate-to-severe pruritus at baseline (PBC Worst Itch NRS score  $\geq 4$ ); for those with moderate-to-severe pruritus, the baseline mean PBC Worst Itch NRS score was 6.2 for participants in the elafibranor 80 mg group and 6.3 for participants in the placebo group. The majority (95%) of participants received treatment in combination with UDCA or as monotherapy in 5% of participants who were unable to tolerate UDCA.

The primary endpoint was cholestasis response at week 52 as defined as the composite endpoint:  $\text{ALP} < 1.67 \times \text{ULN}$  and  $\text{TB} \leq \text{ULN}$  and ALP decrease  $\geq 15\%$ . The key secondary endpoints were ALP normalisation at week 52 and the change in pruritus from baseline through week 52 and through week 24 based on the PBC Worst Itch NRS score in participants with moderate-to-severe pruritus at baseline.

Table 1 shows the primary composite endpoint of cholestasis response and the key secondary endpoint of ALP normalisation.

**Table 1. Percentage of Adult Participants with PBC Achieving the Primary Efficacy Composite Endpoint of Cholestasis Response and Key Secondary Efficacy Endpoint of ALP Normalisation at Week 52**

Analysis Population	Elafibranor 80 mg (N=108)	Placebo (N=53)	Treatment Difference (95% CI) <sup>[3]</sup>	Odds Ratio (95% CI) <sup>[4]</sup>	P-value <sup>[4]</sup>
Primary Composite Endpoint: Cholestasis Response <sup>[1]</sup>					
ITT	51%	4%	47% (32, 57)	37.6 (7.6, 302.2)	<0.0001
Key Secondary Endpoint: ALP Normalisation <sup>[2]</sup>					
ITT	15%	0	15% (6, 23)	Infinity (2.8, infinity)	0.0019

ITT: Intention-to-treat

<sup>[1]</sup> Cholestasis response is defined as ALP <1.67x ULN and TB ≤ULN and ALP decrease from baseline ≥ 15% at week 52. Participants who stopped prematurely the study treatment (intercurrent event 1) or used rescue therapy for PBC (intercurrent event 2) prior to week 52 assessment were considered as non-responders. In case of missing data at week 52 for participants without an intercurrent event, the closest non-missing assessment from the DB treatment period was taken into account.

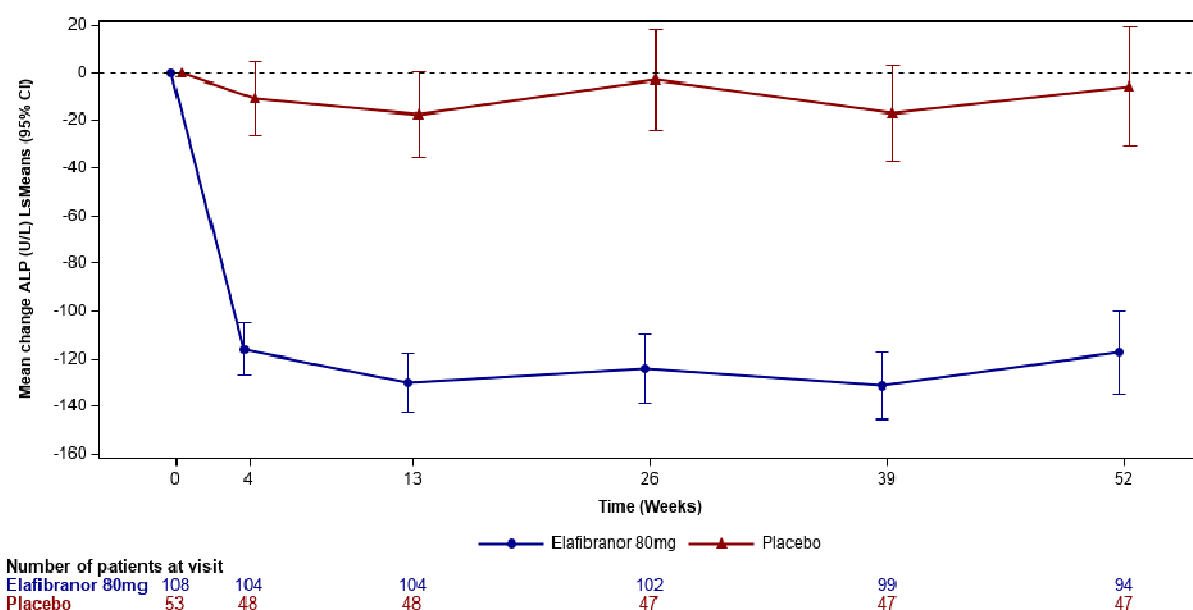
<sup>[2]</sup> Normalisation of ALP at week 52 defined as proportion of participants with ALP ≤1.0× ULN. The approach to handle intercurrent events or missing data is the same as for the primary endpoint.

<sup>[3]</sup> The response rate differences between the treatment groups and 95% CI were calculated using the Newcombe method stratified by randomisation strata for cholestasis response and unstratified for ALP normalisation.

<sup>[4]</sup> Odds ratios of response and p-values to compare treatments were from the exact Cochran-Mantel-Haenszel (CMH) test stratified by the randomisation strata.

A significant decrease from baseline was seen as early as week 4 and was sustained over 52 weeks of treatment in the elafibranor group compared to placebo (Figure 1).

**Figure 1. Mean Change from Baseline in ALP Over Time - ITT analysis set**



### Patient-reported outcomes

In participants with moderate-to-severe pruritus at baseline, a greater decrease from baseline in PBC Worst Itch NRS score through Week 52 and Week 24 was observed in participants randomised to elafibranor compared to placebo but this did not reach statistical significance (Table 2).

**Table 2. Change in Pruritus from Baseline Through Week 52 and Week 24 as Measured by PBC WI-NRS in those with Moderate-to-Severe Pruritus at Baseline**

	Elafibranor 80 mg (N=44)	Placebo (N=22)	Treatment Difference	P-value
Key Secondary Endpoint: Change Through Week 52 <sup>[1]</sup>				
Least Squares Mean (95% CI)	-1.9 (-2.6, -1.3)	-1.1 (-2.1, -0.2)	-0.8 (-2.0, 0.4)	0.1970
Key Secondary Endpoint: Change Through Week 24 <sup>[1]</sup>				
Least Squares Mean (95% CI)	-1.6 (-2.2, -1.0)	-1.3 (-2.2, -0.3)	-0.3 (-1.5, 0.8)	0.5522

<sup>[1]</sup> Analysis used the mixed model for repeated measures (MMRM) with treatment, 4-week period and treatment by 4-week period interaction as fixed factors and adjusting for baseline PBC Worst Itch NRS and the stratification factor of ALP >3 x ULN or TB >ULN. An unstructured correlation structure is used. Treatment effect through week 52 is the average of NRS score changes from baseline for the thirteen 4-week periods. Treatment effect through week 52 and week 24 is the average treatment effects of NRS score changes from baseline over the first thirteen 4-week periods and first six 4-week periods, respectively. The assessments of PBC Worst Itch NRS scores after participants stopped prematurely the study treatment or took a rescue therapy for pruritus were considered as missing.

Treatment with elafibranor was associated with an improvement in pruritus as evidenced by a reduction in the PBC-40 Itch and 5-D Itch total scores compared to placebo at Week 52 (Table 3).

**Table 3. Change in Pruritus from Baseline to Week 52 in PBC-40 Itch and 5-D Itch total scores in those with Moderate-to-Severe Pruritus at Baseline**

	Elafibranor 80 mg (N=44)	Placebo (N=22)	Treatment Difference	P-value
PBC-40 Itch total score: Change at Week 52 <sup>[1]</sup>				
Least Squares Mean (95% CI)	-2.5 (-3.4, -1.6)	-0.1 (-1.6, 1.3)	-2.3 (-4.0, -0.7)	0.0070
5-D Itch total score: Change at Week 52 <sup>[1]</sup>				
Least Squares Mean (95% CI)	-4.2 (-5.6, -2.9)	-1.2 (-3.3, 0.9)	-3.0 (-5.5, -0.5)	0.0199

<sup>[1]</sup> Analysis uses the mixed model for repeated measures (MMRM) with treatment, visits (until week 52) and treatment by visit interaction as fixed factor and adjusting for baseline score and the stratification factor of ALP > 3x ULN or TB > ULN.

#### Lipid parameters

Elafibranor demonstrated a favourable effect on lipid parameters. The mean reduction in very low-density lipoprotein-cholesterol (VLDL-C) and triglycerides (TG) was greater in participants treated with elafibranor compared to placebo at Week 52. The LSM means difference from placebo in VLDL-C was -0.1 mmol/L [(95% CI: -0.2, -0.1); p<0.001] and for TG was -0.3 mmol/L [(95% CI: -0.4, -0.1)]; p<0.001]. High-density lipoprotein-cholesterol (HDL-C) remained stable on treatment with elafibranor.

#### Mean reduction in IgM

The mean reduction in IgM was greater in participants treated with elafibranor compared to placebo at Week 52. The LSM means difference from placebo in IgM was -0.6 g/L [(95% CI: -0.9, -0.3); p<0.001].

#### Mean reduction in biomarkers of BA synthesis

The mean reduction in C4 and in FGF-19 was greater in participants treated with elafibranor compared to placebo at Week 52. The LSM means difference from placebo in C4 was -5.176 ug/L [(95% CI: -10.291; -0.062); p=0.0474]; and in FGF-19 it was -86.95 pg/mL [(95% CI: -170.37; -3.53); p=0.0412].

#### Paediatric population

The European Medicines Agency has waived the obligation to submit the results of studies with Iqirvo in all subsets of the paediatric population in primary biliary cholangitis as per paediatric investigation plan (PIP) decision, for the granted indication.

## 5.2 Pharmacokinetic properties

Elafibranor plasma exposure (AUC) increases proportionally from 50 to 360 mg (0.6 to 4.5 times the recommended dosage). Steady state is achieved by day 14 following once daily dosing. The pharmacokinetics (PK) of elafibranor and its major active metabolite GFT1007 was found to be time-independent after 16-day repeated administration. Elafibranor and its active metabolite exposure in participants with PBC are listed in Table 4.

**Table 4. Elafibranor and GFT1007 exposures in participants with PBC at steady state following 80 mg QD (once daily)**

	$C_{\max,ss}$ (ng/mL)	$AUC_{0-24}$ (ng • h/mL)	Accumulation ratio
Elafibranor	802	3758	2.9
GFT1007	2058	11985	1.3

### Absorption

Following repeated oral administration in participants with PBC, median peak plasma levels of elafibranor and GFT1007 at doses of 80 mg occur within 1.25 hours.

When administered with a high-fat and high-calorie meal, there was a 30-minute delay in  $T_{\max}$  for elafibranor and a 1-hour delay for GFT1007 in fed compared to fasted conditions. The plasma  $C_{\max}$  and AUC of elafibranor decreased by 50% and 15% respectively and the plasma  $C_{\max}$  of GFT1007 decreased by 30% but the AUC was not affected. Given the 2.2-5.3-fold higher circulating plasma levels of the pharmacologically active metabolite GFT1007 compared to elafibranor, food intake was deemed to have limited clinical impact based on overall exposure of parent and active metabolite.

### Distribution

Plasma protein binding of both elafibranor and GFT1007 is approximately 99.7% (mainly to serum albumin). The mean apparent volume of distribution ( $V_d/F$ ) of elafibranor in humans is 4731L, following single dose of elafibranor at 80 mg in fasted conditions.

### Metabolism

In vitro, elafibranor is metabolised by 15-ketoprostaglandin 13- $\Delta$  reductase (PTGR1). In vitro neither elafibranor nor GFT1007 show major metabolism by the main cytochrome P450 (CYP) and uridine diphosphate (UDP)-glucuronosyltransferase (UGT) isoforms.

Following oral administration of  $^{14}C$  radiolabelled elafibranor, it was rapidly hydrolysed to the active metabolite GFT1007. Two major metabolites were identified in plasma, GFT1007 (active metabolite) and glucuronide conjugates (inactive metabolites).

### Transporters

Elafibranor was found in vitro to be a substrate for intestinal transporters multidrug resistance-associated protein 2 (MRP2) and breast cancer resistance protein (BCRP).

The role of active efflux transport is considered to be negligible compared to the passive, concentration-gradient driven, high permeability absorption of elafibranor.

### Elimination

Following single 80 mg dose under fasted conditions, mean elimination half-life is 68.2 hours for elafibranor, and 15.4 hours for metabolite GFT1007. Elafibranor mean apparent total clearance (CL/F) was 50.0 L/h after a single 80 mg dose under fasted conditions.

### Excretion

Following a single 120 mg oral dose of <sup>14</sup>C radiolabelled elafibranor in healthy participants, approximately 77.1% of the dose was recovered in faeces, primarily as elafibranor (56.7% of the administered dose) and its active metabolite GFT1007 (6.08% of the administered dose). Approximately 19.3% recovered in urine, primarily as glucuronide conjugates.

### Special populations

There was no evidence that age (from 18 to 80 years old), gender, race, Body Mass Index (BMI), and renal status, had any clinically meaningful impact on elafibranor and GFT1007 PK.

### *Hepatic impairment*

The total drug exposure of the parent and active metabolite was not significantly different between participants with normal hepatic function and hepatically impaired participants (Child Pugh A, B and C). No dose adjustment is required for patients with mild (Child Pugh A) or moderate (Child Pugh B) hepatic impairment. However, the unbound fraction of elafibranor and GFT1007 increased by approximately 3-fold in the severe (Child Pugh C) hepatically impaired participants. Elafibranor is not recommended for patients with severe hepatic impairment (Child-Pugh C).

### Drug-Drug Interactions

Based on in vitro studies, CYP and UGT enzymes were shown not to play a major role in elafibranor metabolism. Drug-drug interactions (DDI) are expected to be minimal with drugs that significantly alter CYP or UGT activity.

### Clinical studies

#### *Warfarin (CYP2C9 substrate):*

Concomitant administration of elafibranor with warfarin resulted in no increase in exposure (AUC, C<sub>max</sub>) of warfarin, and no difference in international normalised ratio (INR) compared to warfarin alone.

#### *Simvastatin and atorvastatin (CYP3A, organic anion transporting polypeptides 1B1 (OATP1B1) and OATP1B3 substrates):*

Concomitant administration of repeat doses of elafibranor with simvastatin, or atorvastatin, resulted in no increase in exposure (AUC, C<sub>max</sub>) of simvastatin or its β-Hydroxyacid metabolite, or atorvastatin.

*Indomethacin (PTGR1 inhibitor):*

Following clinical DDI studies, no effect on the clinical PK of elafibranor was observed with co-administration of indomethacin.

*Sitagliptin (dipeptidyl peptidase-IV (DPP-IV) inhibitor):*

No clinically significant effects were observed when co-administering elafibranor as a DDI perpetrator with sitagliptin.

#### In Vitro Studies

*Cytochrome P450 (CYP) inhibition and induction:*

Elafibranor and GFT1007 were not considered inhibitors of CYP1A2, CYP2B6, CYP2C8, CYP2C9, CYP2C19, CYP2D6, and CYP3A4. No time dependent CYP inhibition was observed.

Elafibranor and GFT1007 did not cause induction on CYP1A2, CYP2B6, and CYP3A4.

*UGT inhibition:*

Based on in vitro data elafibranor was not expected to inhibit UGT1A1, 1A3, 1A4, 1A6, 1A9, 2B7, 2B10, and 2B15.

GFT1007 did not inhibit UGT1A1, 1A3, 1A4, 1A9, 2B7, 2B10, and 2B15. GFT1007 was an inhibitor of UGT1A6 however currently clinical interactions are not expected.

*Transporter Systems:*

Elafibranor was an inhibitor of OATP1B3 and BCRP but was not an inhibitor of Permeability-glycoprotein/multidrug resistance protein 1 (P-gp/MDR1), OATP1B1, organic cation transporter 1 (OCT1), OCT2, organic anion transporter 1 (OAT1), multidrug and toxin extrusion protein 1 (MATE1), MATE2-K, OAT3 and bile salt export pump (BSEP).

GFT1007 was not considered an inhibitor of OAT3, OATP1B3, BSEP, P-gp/MDR1, BCRP, OATP1B1, OCT1, OCT2, OAT1, MATE1 and MATE2-K.

GFT3351 was an inhibitor of multidrug resistance associated protein 3 (MRP3) but the clinical significance of MRP3 inhibition by GFT3351 is unknown.

## **5.3 Preclinical safety data**

Nonclinical data reveal no special hazard for humans based on conventional studies of safety pharmacology, repeat dose toxicity, genotoxicity and carcinogenic potential.

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#### Carcinogenesis/mutagenesis

Elafibranor was assessed in two carcinogenicity studies in mice and rats, with oral gavage administration for up to two years at 1, 3, 10, or 30 mg/kg/day. Up to the highest dose tested in both species (approximately 3- and 6-fold the AUC exposure at the maximum human recommended dose (MHRD) of 80 mg/day), elafibranor

administration does not result in an increased incidence of tumours that are relevant to humans.

Elafibranor, its principal active metabolite GFT1007 and the acyl glucuronide metabolite racemic GFT3351 have been tested in a comprehensive battery of in vivo and/or in vitro genotoxicity assays. Overall, the evidence suggests that elafibranor does not pose a genotoxicity risk.

#### Animal toxicity and pharmacology

General toxicology has been assessed in rodent (mouse and rat) and non-rodent (monkey) species after single, and repeated dose oral administration for up to 6 months in rats and 12 months in monkeys respectively.

Elafibranor exhibited a favourable safety profile when administered as single oral doses in acute toxicity studies in rats and mice. Repeat-dose oral administration for up to 6 months in rats and 12 months in monkeys did not reveal any sign of human-relevant toxicity up to the maximum tested dose of 100 and 50 mg/kg/day, respectively (corresponding to ~15 fold the AUC exposure at the MHRD in both rat and monkey studies).

In addition, up to the highest doses tested, elafibranor did not show any relevant effects on organs and systems previously described as being of a safety concern with PPAR $\gamma$  agonists (weight gain, haemodilution, fluid retention leading to congestive heart failure, bladder cancer).

#### Reproduction and development toxicity

Elafibranor had no adverse effect on fertility in male rats or on early embryonic development at up to 100 mg/kg/day (corresponding to approximately 17-fold the AUC exposure at the MHRD). An effect on fertility in female rats cannot be excluded at doses greater than 30 mg/kg/day (i.e. greater than ~4-fold the AUC exposure at the MHRD).

Elafibranor has shown evidence of developmental toxicity in both rats and rabbits at clinically relevant exposure.

In pregnant rats, once daily oral administration of elafibranor during the period of organogenesis from gestation day (GD) 6 to GD17 resulted in no effect on embryofoetal development at dose up to 300 mg/kg/day (~100-fold the AUC exposure at the MHRD). However, in the rat pre- and post-natal development study, once daily oral administration of elafibranor through pregnancy and lactation (from GD6 to lactation day (LD) 21) was associated with reduced pup survival (especially but not exclusively in the early perinatal period), blue/black discolouration of the caudal section of some pups, lower pup body weights and developmental delays at all doses (from maternal exposures of 2-fold the AUC exposure at the MHRD and above). At maternal exposures at or above 4.5-fold the AUC exposure at the MHRD, there was evidence of aortic or iliac arterial thrombosis in prematurely decedent pups. In pups sampled on postnatal day 14, elafibranor was not detected and only minimal plasma exposure to its active metabolite was detectable in pups from the highest dose group where maternal exposures were 16-fold above AUC exposure at MHRD. It is unclear whether excretion of Elafibranor or its metabolite in milk contributed to adverse effects in offspring. The surviving adult offspring showed no effects of elafibranor on learning and memory, reflex development, or reproductive capability.



In pregnant rabbits, elafibranor administration during organogenesis at the high dose of 300 mg/kg/day (3-fold the AUC exposure at MHRD), was associated with marked maternal toxicity, increased embryo-lethality, reduced foetal weight plus a low incidence of foetal malformations. At the mid-dose of 100 mg/kg/day (0.5-fold AUC exposure at the MHRD), despite maternal toxicity, there was no effect on embryofoetal survival, or foetal weight nor foetal malformations. The only finding was foetal ossification variations in the distal limb bones. No adverse effects were seen on embryofoetal development at the low dose of 30 mg/kg/day (i.e., approximately 0.1-fold the AUC exposure at the MHRD).

#### Safety pharmacology

No safety issues were identified when assessing the potential effects of elafibranor on the cardiovascular, respiratory and central nervous systems.

#### Phototoxic potential

In the in vitro assay using 3T3 fibroblasts, elafibranor, but not GFT1007, showed phototoxic potential. From the follow-up UV-LLNA mice study, it was concluded that there is no in vivo phototoxicity risk associated with elafibranor up to the highest tested dose of 800 mg/kg/day (~46-fold the  $C_{max}$  exposure at the MHRD). Moreover, tissue distribution studies using radiolabelled elafibranor in mice, rats and monkeys showed that there was no accumulation of elafibranor in eyes and skin, which limits its phototoxic potential.

## **6 PHARMACEUTICAL PARTICULARS**

### **6.1 List of excipients**

#### Tablet content

Microcrystalline cellulose

Povidone

Croscarmellose sodium

Anhydrous colloidal silica

Magnesium stearate

#### Film-coating

Polyvinyl alcohol-part hydrolysed

Titanium dioxide (E171)

Macrogol

Talc

Iron oxide yellow (E172)

Iron oxide red (E172)

## **6.2 Incompatibilities**

Not applicable

## **6.3 Shelf life**

30 months

After first opening, the product may be stored for a maximum of 30 days.

## **6.4 Special precautions for storage**

Store in the original package.

This medicinal product does not require any special temperature storage conditions.

## **6.5 Nature and contents of container**

Elafibranor 80 mg tablets are packaged in 40 mL high-density polyethylene (HDPE) bottle with a polypropylene child-resistant screw cap with integrated desiccant unit. The bottle is then packed into an outer carton.

Each bottle contains 30 film-coated tablets.

## **6.6 Special precautions for disposal**

Any unused medicinal product or waste material should be disposed of in accordance with local requirements.

# **7 MARKETING AUTHORISATION HOLDER**

Ipsen Limited  
5<sup>th</sup> Floor, The point  
37 North Wharf Road  
London W2 1AF  
United Kingdom

**8      MARKETING AUTHORISATION NUMBER(S)**

PLGB 34926/0029

**9      DATE OF FIRST AUTHORISATION/RENEWAL OF THE  
AUTHORISATION**

04/10/2024

**10     DATE OF REVISION OF THE TEXT**

04/10/2024