

Public Assessment Report Scientific discussion

Loperamide Medical Valley (loperamide hydrochloride)

SE/H/2055/01/DC

This module reflects the scientific discussion for the approval of Loperamide Medical Valley. The procedure was finalised on 2020-12-22. For information on changes after this date please refer to the module 'Update'.

I. INTRODUCTION

The application for Loperamide Medical Valley, 2 mg, tablet, is a generic application made according to Article 10(1) of Directive 2001/83/EC. The applicant, Medical valley Invest AB, applies through the Decentralised Procedure with Sweden acting as reference member state (RMS) and IS as concerned member state (CMS).

The reference medicinal product chosen for the purposes of establishing the expiry of the data protection period is Imodium, 2 mg, tablet, authorised in SE since 1990, with McNeil Sweden AB as marketing authorisation holder.

The reference product used in the bioequivalence study is Imodium, 2 mg, tablet, from SE with McNeil Sweden AB as marketing authorisation holder.

European Reference Product (ERP)

A European Reference Product is used in CMS IS: Imodium, 2 mg, tablet, authorised in SE since 1990, with McNeil Sweden AB as marketing authorisation holder.

The justification to use this product is based on RMS's own files.

For approved indications, see the Summary of Product Characteristics.

For recommendations to the marketing authorisation not falling under Article 21a/22 of Directive 2001/83/EC and conditions to the marketing authorisation pursuant to Article 21a or 22 of Directive 2001/83/EC to the marketing authorisation, please see section VI.

II. QUALITY ASPECTS

II.1 Drug Substance

The structure of the drug substance has been adequately proven and its physico-chemical properties are sufficiently described.

The manufacture of the drug substance has been adequately described and satisfactory specifications have been provided for starting materials, reagents and solvents.

The drug substance specification includes relevant tests and the limits for impurities and degradation products have been justified. The analytical methods applied are suitably described and validated.

Stability studies confirm the retest period.

II.2 Medicinal Product

The medicinal product is formulated using excipients listed in section 6.1 in the Summary of Product Characteristics.

The manufacturing process has been sufficiently described and critical steps identified.

The tests and limits in the specification are considered appropriate to control the quality of the finished product in relation to its intended purpose.

Stability studies have been performed and data presented support the shelf life and special precautions for storage claimed in the Summary of Product Characteristics, sections 6.3 and 6.4.

III. NON-CLINICAL ASPECTS

III.1 Discussion on the non-clinical aspects

Since this product has been shown to be essentially similar and refer to a product approved based on a full application with regard to preclinical data, no further such data have been submitted or are considered necessary.

IV. CLINICAL ASPECTS

IV.1 Pharmacokinetics

Pharmacokinetics

To support the marketing authorisation application the applicant has conducted one bioequivalence study comparing Loperamide Medical Valley with the reference product Imodium.

Pharmacokinetic properties of the active substance

Absorption: Loperamide has an oral bioavailability of 0.3%.

Metabolism: Loperamide is mainly metabolised by oxidative N-demethylation via CYP3A4 and CYP2C8.

Elimination: The half-life is approximately 11 hours (range 9-14 hours).

Study 17-VIN-0089

Methods

This was a single-dose, two-way crossover study conducted in 40 healthy volunteers, comparing Loperamide Hydrochloride, 2 mg, tablets with Imodium, 2 mg, tablets under fasting conditions. Blood samples for concentration analysis were collected pre-dose and up to 96 hours post-dose. Plasma concentrations of loperamide and N-desmethyl loperamide were determined with an LC-MS/MS method. Analysis of variance (ANOVA) was performed on the log-transformed data for AUC_{0-t} and C_{max} . The study was conducted between 24th July and 9th August 2017.

Results

The results from the pharmacokinetic and statistical analysis are presented in Table 1 below.

Table 1. Pharmacokinetic parameters (non-transformed values; arithmetic mean $\pm$ SD, t_{max} median, range) for loperamide, n=40.

Treatment	AUC_{0-t} pg*h/ml	C_{max} pg/ml	t_{max} h
Test	28101 $\pm$ 13262	1150.4 $\pm$ 595.7	5.33 (1.50-8.00)
Reference	28371 $\pm$ 12647	1150.8 $\pm$ 526.3	5.00 (1.00-8.00)
*Ratio (90% CI)	97.48 (90.56-104.92)	97.04 (88.72-106.14)	-
AUC_{0-t} area under the plasma concentration-time curve from time zero to t hours C_{max} maximum plasma concentration t_{max} time for maximum plasma concentration			

*calculated based on ln-transformed data

For AUC_{0-t} and C_{max} of loperamide the 90% confidence interval for the ratio of the test and reference products fell within the conventional acceptance range of 80.00-125.00%. The results for the metabolite N-desmethyl loperamide was provided as supportive data.

Discussion and overall conclusion

The bioequivalence study and its statistical evaluation were in accordance with accepted standards for bioequivalence testing, as stated in the Guideline on the investigation of bioequivalence (CPMP/EWP/QWP/1401/98 Rev 1/Corr). The bioanalytical methods were adequately validated.

Based on the submitted bioequivalence study, Loperamide Medical Valley is considered bioequivalent with Imodium.

IV.2 Discussion on the clinical aspects

Since this product has been shown to be essentially similar and refer to a product approved based on a full application with regard to clinical efficacy/safety data, no further such data have been submitted or are considered necessary.

IV.3 Risk Management Plan

Risk Management Plan

The MAH has submitted a risk management plan, in accordance with the requirements of Directive 2001/83/EC as amended, describing the pharmacovigilance activities and interventions designed to identify, characterise, prevent or minimise risks relating to Loperamide Medical Valley.

Safety specification

Summary of safety concerns	
Important identified risks	• Severe skin reactions, including Stevens Johnson syndrome, Toxic epidermal necrolysis and Erythema multiforme • Ileus (including paralytic ileus) • Megacolon (including toxic megacolon)
Important potential risks	• QT prolongation and/or serious ventricular arrhythmias, including Torsades de Pointes associated with abuse and misuse of loperamide • CNS toxicity due to relative overdose in patients with hepatic impairment • Prolonged use masking an underlying condition requiring medical attention
Missing information	• Use in pregnant or breastfeeding women • Use in children under 2 years of age

Pharmacovigilance Plan

Routine pharmacovigilance is suggested and no additional pharmacovigilance activities are proposed by the applicant, which is endorsed.

Risk minimisation measures

Routine risk minimisation is suggested and no additional risk minimisation activities are proposed by the applicant, which is endorsed.

Summary of the RMP

The submitted Risk Management Plan, version 0.1 signed 27/11/2019 is considered acceptable.

The MAH shall perform the required pharmacovigilance activities and interventions detailed in the agreed RMP presented in Module 1.8.2 of the Marketing Authorisation and any agreed subsequent updates of the RMP.

An updated RMP should be submitted:

- At the request of the RMS;
- Whenever the risk management system is modified, especially as the result of new information being received that may lead to a significant change to the benefit/risk profile or as the result of an important (pharmacovigilance or risk minimisation) milestone being reached.

If the dates for submission of a PSUR and the update of a RMP coincide, they can be submitted at the same time, but via different procedures.

V. USER CONSULTATION

The package leaflet has been evaluated via a user consultation study in accordance with the requirements of Articles 59(3) and 61(1) of Directive 2001/83/EC. The language used for the purpose of user testing the PIL was English.

The results show that the package leaflet meets the criteria for readability as set out in the Guideline on the readability of the label and package leaflet of medicinal products for human use.

VI. OVERALL CONCLUSION, BENEFIT/RISK ASSESSMENT AND RECOMMENDATION

The quality of the generic product, Loperamide Medical Valley, is found adequate. There are no objections to approval of Loperamide Medical Valley, from a non-clinical and clinical point of view. Bioequivalence between the test and reference product has been adequately demonstrated. The product information is acceptable. The application is therefore recommended for approval.

List of recommendations not falling under Article 21a/22 of Directive 2001/83/EC in case of a positive benefit risk assessment

N/A

List of conditions pursuant to Article 21a or 22 of Directive 2001/83/EC

N/A

VII. APPROVAL

The decentralised procedure for Loperamide Medical Valley, 2 mg, tablet was positively finalised on 2020-12-22.

Public Assessment Report – Update

Procedure number*	Scope	Product Information affected (Yes/No)	Date of end of procedure	Approval/non approval	Summary/Justification for refuse

*Only procedure qualifier, chronological number and grouping qualifier (when applicable)