

SCIENTIFIC DISCUSSION SUPPLEMENT

1. Introduction

A new BE study was necessitated due to a Notice of Concern (NOC) issued by WHO Prequalification Unit relating to the implementation status of Good Clinical Practices standards at Semler Research Centre Private Ltd., Bangalore, India.

WHO/PQT has requested applicants of the affected products to review the impact of these findings and take actions to confirm bioequivalence of their products.

This supplement therefore includes the submission and review outcome of a new BE study for TB174.

2. Assessment of quality

The assessment was done in accordance with the requirements of WHO's *Guidelines on submission of documentation for a multisource (generic) finished pharmaceutical product for the WHO Prequalification of Medicines Programme: quality part*.

There have been no material changes to the quality aspects and the content remains unchanged.

Conclusion

The quality part of the dossier is accepted.

3. Assessment of bioequivalence

The following bioequivalence study has been performed in 2016 according to internationally accepted guidelines.

An open label, balanced, randomized, two-treatment, two-period, two-sequence, single oral dose, crossover, bioequivalence study of Isoniazid BP 300 mg tablets, manufactured by Micro Labs Ltd. India compared with that of Isoniazid 300 mg USP tablets, manufactured for: Sandoz Inc. Princeton, NJ 08540, in healthy, adult, human subjects under fasting conditions (study no. 0554-16).

The objective of the study was to compare the bioavailability of the stated Isoniazid BP 300 mg tablet manufactured by/for Micro Labs Ltd. India (test drug) with the reference formulation Isoniazid USP 300 mg tablets, (Sandoz Inc.) and to assess bioequivalence. The comparison was performed as a single centre, open label, single dose, randomized, crossover study in healthy subjects under fasting conditions. Each subject was assigned to receive each of the following two treatments in a randomized fashion:

Treatment T: Test – 1 tablet Isoniazid BP 300 mg
(isoniazid 300 mg)
Batch no. IZABH0130.

Treatment R: Reference – 1 tablet Isoniazid USP 300 mg
(isoniazid 300 mg)
Batch no. ME150324.

A 7-day wash-out period was observed between administration of test and reference. Serial blood samples (1 pre-dose sample and 24 samples within 24 h post dose) were taken during each study period to obtain bioavailability characteristics AUC, C_{max} and t_{max} for bioequivalence evaluation. Drug concentrations for isoniazid were analyzed using a validated LC-MS/MS method. The limit of quantification was stated to be about 23 ng/mL for isoniazid.

The study was performed with 36 participants; data generated from a total of 33 subjects were utilized for analysis to establish pharmacokinetic parameters and assess bioequivalence.

Arithmetic mean and geometric mean values of the pharmacokinetic variables for isoniazid as well as statistical results are summarised in the following table:

Isoniazid

Pharmacokinetic Parameter	Test formulation (T) arithmetic mean $\pm$ SD (geometric mean)	Reference (R) arithmetic mean $\pm$ SD (geometric mean)	log-transformed parameters	
			Ratio T/R (%)	Conventional 90% CI (ANOVAlog)
$t_{\max}$ (h)	0.67 (0.167 – 2.50)	0.83 (0.33 – 2.00)	–	–
$C_{\max}$ (ng/mL)	7325 $\pm$ 1688 (7146)	7021 $\pm$ 1815 (6760)	105.7	99.5 – 112.4
AUC _{0-t} (ng·h/mL)	34795 $\pm$ 14206 (31270)	33865 $\pm$ 13964 (30214)	103.5	100.5 – 106.6
AUC _{0-inf} (ng·h/mL)	35291 $\pm$ 14557 --	34410 $\pm$ 14359 --	-	-

The results of the study show that preset acceptance limits of 80 -125 % are met by both AUC and $C_{\max}$ values regarding isoniazid. Accordingly, the test Isoniazid BP 300 mg tablet meets the criteria for bioequivalence with regard to the rate and extent of absorption and is therefore bioequivalent to the reference Isoniazid USP 300 mg tablet (Sandoz).

4. Summary of product safety and efficacy

[TB174 trade name] has been shown to conform to the same relevant standards of quality, efficacy and safety as those required of the comparator product. According to the submitted data on quality and bioavailability, [TB174 trade name] is pharmaceutically and therapeutically equivalent and thus interchangeable with the comparator product Isoniazid 300 mg tablets, USP, manufactured for Sandoz Inc. Princeton, NJ 0854 USA for which benefits have been proven in terms of clinical efficacy. The clinical safety of [TB174 trade name] is considered acceptable when guidance and restrictions stated in the summary of product characteristics (SmPC) are considered. Refer to the SmPC (WHOPAR part 4) for data on clinical safety.

5. Benefit risk assessment of bioequivalence study

Bioequivalence

[TB174 trade name] has been shown to be bioequivalent with Isoniazid tablets, USP 300 mg, manufactured for Sandoz Inc. Princeton, NJ 0854 USA.