COMMUNICATION

Very Rapid Dissolution Is Not Needed to Guarantee Bioequivalence for Biopharmaceutics Classification System (BCS) I Drugs

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ABSTRACT: Currently, the EMEA, FDA, and WHO as regulatory authorities accept rapidly dissolving (>85% dissolved in 30 min) biopharmaceutics classification system (BCS) I drug products for biowaiver candidates. In the draft EMEA guideline the requirement has been set tighter, that is, the drug product should be very rapidly dissolving (>85% dissolved in 15 min) to be eligible for a biowaiver. Pharmacokinetic modeling of 32 BCS I drugs was performed to demonstrate that very rapid dissolution is not necessary to guarantee bioequivalence for them. Rapid dissolution and similar dissolution profiles are sufficient criteria for all BCS I drugs. © 2009 Wiley-Liss, Inc. and the American Pharmacists Association J Pharm Sci 99:621–625, 2010

Keywords: bioequivalence; biopharmaceutics classification system (BCS); dissolution rate; absorption; solubility

INTRODUCTION

Biopharmaceutics classification system (BCS) I drugs are currently accepted as eligible for biowaivers. For these drugs, *in vitro* dissolution studies can be used as surrogate for *in vivo* bioequivalence studies. In the draft EMEA guideline on the investigation of bioequivalence, BCS I drugs are accepted as biowaiver candidates if the drug product is very rapidly dissolving, that is, more than 85% is dissolved in 15 min.[1] Currently the FDA, EMEA, and WHO accept BCS I drugs for biowaivers if the drug product is rapidly dissolving, that is, more than 85% is dissolved in 30 min.[2–4] The aim of this article is to present simulations that were performed to study dissolution criteria for 32 BCS I drugs and to evaluate whether dissolution requirements, more than 85% dissolved in 15 or 30 min and similar dissolution profiles or not, are sufficient criteria for BCS I drugs.

MATERIALS AND METHODS

Biopharmaceutical Classification

Simulations were performed with 32 BCS I drugs from the WHO model list of essential medicines. The selection of BCS I drugs was based on the

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