This draft guidance, when finalized, will represent the current thinking of the Food and Drug Administration (FDA, or the Agency) on this topic. It does not establish any rights for any person and is not binding on FDA or the public. You can use an alternative approach if it satisfies the requirements of the applicable statutes and regulations. To discuss an alternative approach, contact the Office of Generic Drugs.

This guidance, which interprets the Agency’s regulations on bioequivalence at 21 CFR part 320, provides product-specific recommendations on, among other things, the design of bioequivalence studies to support abbreviated new drug applications (ANDAs) for the referenced drug product. FDA is publishing this guidance to further facilitate generic drug product availability and to assist the generic pharmaceutical industry with identifying the most appropriate methodology for developing drugs and generating evidence needed to support ANDA approval for generic versions of this product.

The contents of this document do not have the force and effect of law and are not meant to bind the public in any way, unless specifically incorporated into a contract. This document is intended only to provide clarity to the public regarding existing requirements under the law. FDA guidance documents, including this guidance, should be viewed only as recommendations, unless specific regulatory or statutory requirements are cited. The use of the word should in FDA guidances means that something is suggested or recommended, but not required.

In May 2021, FDA issued a draft product-specific guidance for industry on generic meloxicam. We are now issuing revised draft guidance for industry that replaces the previously issued guidance.

<table>
<thead>
<tr>
<th>Active Ingredient:</th>
<th>Meloxicam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dosage Form; Route:</td>
<td>Solution; intravenous</td>
</tr>
<tr>
<td>Strength:</td>
<td>30 mg/mL</td>
</tr>
<tr>
<td>Recommended Studies:</td>
<td>In vitro bioequivalence studies including drug particle size and size distribution test, rapid dissolution study, and supportive characterization studies</td>
</tr>
</tbody>
</table>
To qualify for the in vitro option for this drug product, the following criteria should be met:

1. The test and Reference Listed Drug (RLD) formulations are qualitatively (Q1)\(^1\) and quantitatively (Q2)\(^2\) the same (Q1/Q2).

2. Acceptable comparative physicochemical characterizations of the test and Reference Standard (RS) products. Comparative analysis should be performed on at least three batches of both test and RS products and should include:
   a. Polymorphic form of meloxicam, pH, osmolality, and zeta potential

**In vitro bioequivalence study 1:**
Drug particle size and size distribution of meloxicam.

**Additional Comments:** The particle size distribution should be compared using the population bioequivalence (PBE) statistical analysis procedure (95% upper confidence bound) based on D50 and SPAN [i.e. (D90-D10)/D50]. Refer to the most recent version of FDA product-specific guidance on *Budesonide Inhalation Suspension*\(^a\) for additional information regarding PBE. Information on the instrument, analysis mode (if applicable), dilution medium, and level of dilution used for particle size measurements should be submitted along with full profiles of the particle size distribution upon serial dilution.

**In vitro bioequivalence study 2:**
Acceptable comparative study to demonstrate rapid dissolution of meloxicam from the test and reference products.

**Waiver request of in vivo testing:** Not applicable

**Dissolution test method and sampling times:** Not applicable

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**Revision History:** Recommended May 2021; Revised August 2022

**Unique Agency Identifier:** PSG_210583

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\(^1\) Q1 (Qualitative sameness) means that the test product uses the same inactive ingredient(s) as the reference product. 
\(^2\) Q2 (Quantitative sameness) means that concentrations of the inactive ingredient(s) used in the test product are within ±5% of those used in the reference product.