

Contains Nonbinding Recommendations
Draft Guidance on Metformin Hydrochloride; Pioglitazone Hydrochloride

This draft guidance, once finalized, will represent the Food and Drug Administration's (FDA's) current thinking on this topic. It does not create or confer any rights for or on any person and does not operate to bind FDA or the public. You can use an alternative approach if the approach satisfies the requirements of the applicable statutes and regulations. If you want to discuss an alternative approach, contact the Office of Generic Drugs.

Active ingredient: Metformin Hydrochloride; Pioglitazone Hydrochloride

Form/Route: Extended Release Tablets/Oral

Recommended studies: 2 studies

1. Type of study: Fasting
Design: Single-dose, two-way crossover *in vivo*
Strength: 1000 mg/30 mg (base equiv)
Subjects: Healthy males and nonpregnant females, general population.
Additional Comments: The drug products should be administered with 240 mL of a 20% glucose solution in water, followed by 60 mL of the glucose solution administered every 15 minutes for up to 4 hours after dosing during fasting and fed studies.

2. Type of study: Fed
Design: Single-dose, two-way crossover *in vivo*
Strength: 1000 mg/30 mg (base equiv)
Subjects: Healthy males and nonpregnant females, general population.
Additional Comments: Please see comments above.

Analytes to measure (in appropriate biological fluid): Metformin, pioglitazone and hydroxy pioglitazone (M-IV) in plasma.

Bioequivalence based on (90% CI): Metformin and Pioglitazone

Please submit the metabolite data including individual and mean concentrations, individual and mean pharmacokinetic parameters, and geometric means and ratios of means for AUC and C_{max}, as supportive evidence of bioequivalence and comparable therapeutic outcome.

Waiver request of *in vivo* testing: 1000 mg metformin hydrochloride/15 mg pioglitazone (base equiv) based on (i) acceptable bioequivalence studies on the 1000 mg metformin hydrochloride/30 mg pioglitazone (base equiv), (ii) proportional similarity of all strengths, and (iii) acceptable *in vitro* dissolution testing of all strengths.

Dissolution test method and sampling times:

Please note that a **Dissolution Methods Database** is available to the public at the OGD website at <http://www.accessdata.fda.gov/scripts/cder/dissolution/>. Please find the dissolution

information for this product at this website. Please conduct comparative dissolution testing on 12 dosage units each of all strengths of the test and reference products. Specifications will be determined upon review of the application.

In addition to the method above, for modified release products, dissolution profiles on 12 dosage units each of test and reference products generated using USP Apparatus I at 100 rpm and/or Apparatus II at 50 rpm in at least three dissolution media (pH 1.2, 4.5 and 6.8 buffer, water) should be submitted in the application. Agitation speeds may have to be increased if appropriate. It is acceptable to add a small amount of surfactant, if necessary. Please include early sampling times of 1, 2, and 4 hours and continue every 2 hours until at least 80% of the drug is released, to provide assurance against premature release of drug (dose dumping) from the formulation. Specifications will be determined upon review of the data submitted in the application.