

Contains Nonbinding Recommendations

Draft – Not for Implementation

Draft Guidance on Minocycline Hydrochloride

November 2021

This draft guidance, when finalized, will represent the current thinking of the Food and Drug Administration (FDA, or the Agency) on this topic.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.

This is a new draft product-specific guidance for industry on generic minocycline hydrochloride.

Active Ingredient: Minocycline hydrochloride

Dosage Form; Route: Aerosol, foam; topical

Recommended Study: One study

1. Type of study: Bioequivalence study with clinical endpoint
Study Design: Randomized, double blind, parallel, placebo controlled, in vivo
Strength: EQ 4% Base
Subjects: Males and non-pregnant, non-lactating females with acne vulgaris
Additional comments: Specific recommendations are provided below

Analyte to measure: Not applicable

Bioequivalence based on (90% CI): Clinical endpoint

Waiver request of in vivo testing: Not applicable

Dissolution test method and sampling times: Not applicable

Applicants intending to propose an alternative approach by which to demonstrate bioequivalence should refer to the FDA guidance for industry on *Controlled Correspondence Related to Generic Drug Development* and the FDA guidance for industry on *Formal Meetings Between FDA and ANDA Applicants of Complex Products Under GDUFA* for additional information describing the procedures on how to clarify regulatory expectations regarding your individual drug development program.

Additional comments regarding the bioequivalence study with clinical endpoint:

1. The FDA recommends conducting a bioequivalence study with clinical endpoints in the treatment of acne vulgaris. Subjects are to be randomized to receive the generic minocycline hydrochloride topical aerosol foam, 4%, the reference product or placebo. The study drug is to be administered once daily in the evening for 12 weeks. The primary endpoints are to be evaluated at the end of treatment (Study Week 12).
2. Inclusion Criteria (the sponsor may add additional criteria)
 - a. Male or nonpregnant, nonlactating female aged ≥ 12 and ≤ 40 years with a clinical diagnosis of acne vulgaris
 - b. On the face, ≥ 25 non-inflammatory lesions (i.e., open and closed comedones) AND ≥ 20 inflammatory lesions (i.e., papules and pustules) AND ≤ 2 nodulocystic lesions (i.e., nodules and cysts)
 - c. Investigator's Global Assessment (IGA) of acne severity Grade 2, 3, or 4 (per Table 1)

Table 1. Sample IGA Scale for Acne Vulgaris¹

Grade	Description
0	Clear skin with no inflammatory or noninflammatory lesions
1	Almost clear; rare noninflammatory lesions with no more than one small inflammatory lesion
2	Mild severity; greater than Grade 1; some noninflammatory lesions with no more than a few inflammatory lesions (papules/pustules only, no nodular lesions)
3	Moderate severity; greater than Grade 2; up to many noninflammatory lesions and may have some inflammatory lesions, but no more than one small nodular lesion
4*	Severe; greater than Grade 3; up to many noninflammatory lesions and may have some inflammatory lesions, but no more than a few nodular lesions

* The Case Report Forms for acne studies can allow for reporting by investigators of lesion worsening beyond Grade 4 with treatment. It is recommended that enrollment of acne

¹ Guidance for Industry: *Acne Vulgaris: Developing Drugs for Treatment*. Clinical/Medical. Accessed at <https://www.fda.gov/regulatory-information/search-fda-guidance-documents/acne-vulgaris-establishing-effectiveness-drugs-intended-treatment>

vulgaris subjects not include subjects with nodulocystic acne. Subjects who worsen beyond Grade 4 are escribed in the safety evaluation.

- d. Willing to refrain from use of all other topical acne medications or antibiotics during the 12-week treatment period
- e. If female of childbearing potential, willing to use an acceptable form of birth control during the study

3. Exclusion Criteria (the sponsor may add additional criteria)

- a. Presence of any skin condition that would interfere with the diagnosis or assessment of acne vulgaris (e.g., on the face: rosacea, dermatitis, psoriasis, squamous cell carcinoma, eczema, acneform eruptions caused by medications, steroid acne, steroid folliculitis, or bacterial folliculitis)
- b. Excessive facial hair (e.g., beards, sideburns, moustaches, etc.) that would interfere with diagnosis or assessment of acne vulgaris
- c. History of hypersensitivity or allergy to minocycline, any other tetracyclines, or any of the study medication ingredients
- d. Use within 6 months prior to baseline of oral retinoids (e.g., Accutane[®]) or therapeutic vitamin A supplements of greater than 10,000 units/day (multivitamins are allowed)
- e. Use for less than 3 months prior to baseline of estrogens or oral contraceptives; use of such therapy must remain constant throughout the study
- f. Use on the face within 1 month prior to baseline of:
 - Cryodestruction or chemodestruction
 - Dermabrasion
 - Photodynamic therapy
 - Acne surgery
 - Intralesional steroids
 - X-ray therapy
- g. Use within 1 month prior to baseline of:
 - Spironolactone
 - Systemic steroids
 - Systemic antibiotics
 - Systemic treatment for acne vulgaris (other than oral retinoids, which require a 6-month washout)
 - Systemic anti-inflammatory agents
- h. Use within 2 weeks prior to baseline of:
 - Topical steroids
 - Topical retinoids
 - Topical acne treatments including over-the-counter preparations
 - Topical anti-inflammatory agents
 - Topical antibiotics

4. Subjects should cleanse the face with a mild cleanser and dry skin gently before applying the study product. For application of the product, the subject should dispense a small

amount of the foam onto the fingertips and apply and gently rub the foam into the entire affected areas of the face once daily at approximately the same time at least 1 hour before bedtime. The subject should be instructed to avoid contact of the study product with mouth eyes and open wounds, and to wash their hands after application. The subject should not bathe, shower, or swim for at least 1 hour after application.

5. Subjects should not apply moisturizers, new brands of make-up, creams, lotions, powders, or any topical product other than the assigned treatment to the treatment area. Subjects should minimize exposure to sunlight, including sunlamps, while using the product. Use of sunscreen products and protective clothing over treated areas is recommended when sun exposure cannot be avoided.
6. The protocol should include a list of the prescription and over-the-counter drug products, procedures, and activities that are prohibited during the study, such as:
 - a. Any other topical products applied to face
 - b. Medicated soaps used on face
 - c. Spironolactone
 - d. Oral retinoids, therapeutic vitamin A supplements of greater than 10,000 units/day (multivitamins are allowed) or other systemic treatment for acne vulgaris
 - e. Systemic (e.g., oral or injectable) antibiotics
 - f. Systemic steroids, systemic anti-inflammatory agents, or immunosuppressive drugs
 - g. Antipruritics, including antihistamines, within 24 hours of study visits
 - h. Use on the face of:
 - Cryodestruction or chemodestruction
 - Dermabrasion
 - Photodynamic therapy
 - Acne surgery
 - Intralesional steroids
 - X-ray therapy
 - i. Use of tanning booths, sunbathing, or excessive exposure to the sun
7. The recommended two primary endpoints of the study are 1) mean percent change from baseline to Week 12 in the inflammatory (papules and pustules) lesion counts and 2) mean percent change from baseline to Week 12 in the non-inflammatory (open and closed comedones) lesion counts. The protocol should clearly define papules, pustules, open comedones, closed comedones, nodules and cysts. When counting facial acne lesions, it is important that all lesions be counted, including those present on the nose. Counts of nodules and cysts should be reported separately and not included in the inflammatory or non-inflammatory lesion counts.
8. Application site reactions such as erythema, dryness, burning/stinging, erosion, edema, pain, and itching are to be recorded at each visit to allow a comparison between treatment groups. A descriptive analysis comparing the application site reactions for each treatment

group is recommended. It is important to ensure that the test product is not worse than the reference product with regard to the expected and unexpected application site reactions.

9. Refer to the draft product-specific guidance on *Adapalene; Benzoyl Peroxide, Gel; Topical, 0.3%; 2.5%* for a recommended approach to statistical analysis and study design for bioequivalence studies with clinical endpoints.
10. Study data should be submitted in a standardized format. Refer to the study data standards published at www.fda.gov²

Additional information

Device:

This product is a drug-device combination product. Refer to the FDA guidance for industry on *Comparative Analyses and Related Comparative Use Human Factors Studies for a Drug-Device Combination Product Submitted in an ANDA*. An abbreviated new drug application for a proposed generic drug-device combination product should include complete comparative analyses.

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² Study Data Standards Resources: <https://www.fda.gov/industry/fda-resources-data-standards/study-data-standards-resources>