

BRIEFING

Lamivudine Tablets. This monograph was posted on the *USP* Pending Standards Web page for review and public comment for more than 90 days. No comments were received. The Monograph Development—Antivirals and Antimicrobials Expert Committee approved the monograph as an Authorized USP Pending Standard. The liquid chromatographic procedures in the test for *Chromatographic purity* and in the *Assay* are based on analysis performed with the Hypersil BDS C18 brand of L1 column. The typical retention time for the lamivudine peak is between 9.0 and 12.5 minutes.

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Add the following:

► **Lamivudine Tablets**

v. 1 Authorized September 1, 2008

» Lamivudine Tablets contain not less than 90.0 percent and not more than 110.0 percent of the labeled amount of lamivudine ($C_8H_{11}N_3O_3S$), calculated on the dried basis.

Packaging and storage—Preserve in well-closed containers, protected from light. Store at room temperature.

USP Reference standards (11)—*USP Lamivudine RS*.

Identification—

A: *Ultraviolet Absorption* (197U).

Solution: 0.01 mg per mL.

Medium: phosphoric acid in water (1 : 1000).

Absorption: Exhibits maximum at about 277 nm.

B: The retention time of the major peak in the chromatogram of the *Assay preparation* corresponds to that of the major peak in the chromatogram of the *Standard preparation*, obtained as directed in the *Assay*.

Dissolution (711)—[To come.]

Loss on drying (731)—Dry at 105° for 2 hours; it loses not more than 6.0% of its weight.

Uniformity of dosage units (905): meets the requirements.

Chromatographic purity—

Buffer solution, Mobile phase, Diluent and *Chromatographic system*—Prepare as directed in the *Assay*.

Standard solution—Use the *Standard preparation*, prepared as directed in the *Assay*.

Test solution—Use the *Assay preparation*, prepared as directed in the *Assay*.

Procedure—Using the chromatogram for the *Assay preparation* obtained in the *Assay*, calculate the percentage of each impurity in the portion of Tablets taken by the formula:

$$100 (r_i / r_s)$$

in which r_i is the peak response for each impurity obtained from the *Test solution*; and r_s is the sum of the responses for all the peaks. Not more than 0.1% of any single unknown impurity is found; not more than 0.2% of any individual known impurity is found, and not more than 0.6% of total impurities is found. [NOTE—Disregard peaks at relative retention times of about 0.4 and 0.9 and salicylic acid at about 2.3. These process impurities are monitored in the drug substance.]

Assay—

Buffer—Transfer about 1.9 g of ammonium acetate to a 1000-mL volumetric flask, dissolve in about 900 mL of water, adjust with acetic acid to a pH of 3.8 ± 0.2 , dilute with water to volume, and mix.

Mobile phase—Prepare a filtered (0.45- μ m filter or finer) and degassed mixture (95 : 5) of *Buffer* and methanol. Make adjustments as necessary (see *System Suitability* under *Chromatography* (621)).

Diluent—Use *Mobile phase*.

Standard preparation—Dissolve an accurately weighed quantity of USP Lamivudine RS in *Diluent*, to obtain a solution having a known concentration of about 0.25 mg per mL of lamivudine. Pass a portion of this solution through a nylon filter having a 0.45- μ m or finer porosity.

2 / Lamivudine Tablets

Assay preparation—Place 10 Tablets in a 250-mL volumetric flask. Add about 100 mL of *Diluent*, and sonicate for 15 minutes. Dilute with *Diluent* to volume. Mix well. Allow the solution to settle down for about 10 minutes. Dilute 4 mL of this solution to 100 mL with *Diluent*. Pass a portion of this solution through a nylon filter having a 0.45- μ m or finer porosity.

Chromatographic system (see *Chromatography* <621>)—The liquid chromatograph is equipped with a 277-nm detector and a 4.6-mm \times 25-cm column that contains 5- μ m packing L1. The flow rate is about 1.0 mL per minute. The column temperature is maintained at 35°. Chromatograph the *Standard preparation*, and record the peak areas as directed for *Procedure*: the relative standard deviation for five replicate injections is not more than 2.0%.

Procedure—Separately inject equal volumes (about 10 μ L) of the *Standard preparation* and the *Assay preparation* into the chromatograph, record the chromatograms for about 2.5 times the retention time of lamivudine, and measure the peak responses for lamivudine. Calculate the percentage of $C_8H_{11}N_3O_3S$ in the portion of Tablets taken by the formula:

$$100(C_s/C_u)(r_u/r_s)$$

in which C_s is concentration of lamivudine, in mg per mL, in the *Standard preparation*; C_u is the nominal concentration of lamivudine, in mg per mL, in the *Assay preparation*; and r_u and r_s are the peak responses of lamivudine obtained from the *Assay preparation* and the *Standard preparation*, respectively. (1-Sep-2008)