• **Uniformity of Dosage Units ⟨905⟩:** Meet the requirements

IMPURITIES

• **Organic Impurities**

Diluent, Solution A, Solution B, Mobile phase, System suitability solution, Standard solution, Sample solution, and Chromatographic system: Proceed as directed in the *Assay*.

Analysis

[Note—Record the chromatograms for 2.5 times the retention time of abacavir.]

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of each impurity in the portion of Tablets taken:

$$\text{Result} = (r_U/r_S) \times (C_S/C_U) \times (1/F) \times (M_{r1}/M_{r2}) \times 100$$

r_U = peak response of each impurity from the *Sample solution*

r_S = peak response of abacavir from the *Standard solution*

C_S = concentration of USP Abacavir Sulfate RS in the *Standard solution* (mg/mL)

C_U = nominal concentration of abacavir in the *Sample solution* (mg/mL)

F = relative response factor for each impurity (see *Table 2*)

M_{r1} = molecular weight of abacavir multiplied by 2, 572.66

M_{r2} = molecular weight of abacavir sulfate, 670.74

Acceptance criteria: See *Table 2*.

Table 2

Name	Relative Retention Time	Relative Response Factor	Acceptance Criteria, NMT (%)
Cyclopropyldiaminopurine abacavir[a]	0.57	1.4	0.2
Descyclopropyl abacavir[b]	0.68	1.0	0.2
Abacavir	1.0	—	—
trans-Abacavir[c,d]	1.04	—	—
O-Pyrimidine derivative abacavir[d,e]	1.24	—	—
Any other individual impurity	—	1.0	0.2
Total impurities	—	—	1.0

[a] N^6-Cyclopropyl-9*H*-purine-2,6-diamine.

[b] [(1*S*,4*R*)-4-(2,6-Diamino-9*H*-purin-9-yl)-cyclopent-2-enyl]methanol.

[c] {(1*R*,4*R*)-4-[2-Amino-6-(cyclopropylamino)-9*H*-purin-9-yl]-cyclopent-2-enyl}methanol.

[d] Process impurity monitored in the drug substance and not included in the total impurities.

[e] N^6-Cyclopropyl-9-{(1*R*,4*S*)-4-[(2,5-diamino-6-chloropyrimidin-4-yloxy)methyl]cyclopent-2-enyl}-9*H*-purine-2,6-diamine.

ADDITIONAL REQUIREMENTS

• **Packaging and Storage:** Preserve in well-closed containers. Store at room temperature.

• **USP Reference Standards ⟨11⟩**

USP Abacavir Sulfate RS

USP Abacavir System Suitability Mixture RS—A mixture of abacavir sulfate and *trans*-abacavir.

Abacavir and Lamivudine Tablets

DEFINITION

Abacavir and Lamivudine Tablets contain an amount of abacavir sulfate and lamivudine equivalent to NLT 90.0% and NMT 110.0% of the labeled amount of abacavir ($C_{14}H_{18}N_6O$) and NLT 90.0% and NMT 110.0% of the labeled amount of lamivudine ($C_8H_{11}N_3O_3S$), respectively.

IDENTIFICATION

• **A.** The retention times of the major peaks of the *Sample solution* correspond to those of the *Standard solution*, as obtained in the *Assay*.

ASSAY

• **Procedure**

Diluent: 0.1 N hydrochloric acid

Solution A: Water and trifluoroacetic acid (2000:1)

Solution B: Acetonitrile, methanol, and trifluoroacetic acid (1000:1000:1)

Mobile phase: See *Table 1*. [Note—Return to original conditions and re-equilibrate the system for about 7 min.]

Table 1

Time (min)	Solution A (%)	Solution B (%)
0	100	0
4	100	0
12	70	30
12.1	40	60
13.1	40	60
13.2	100	0

System suitability solution: Dissolve the contents of one vial of USP Lamivudine Resolution Mixture C RS in 2.5 mL of *Diluent*. [Note—One vial of USP Lamivudine Resolution Mixture C RS contains 0.8 mg of USP Lamivudine Resolution Mixture C RS.]

Standard solution: 0.35 mg/mL of USP Abacavir Sulfate RS and 0.15 mg/mL of USP Lamivudine RS in *Diluent*. Sonicate to dissolve prior to final dilution.

Sample stock solution: Nominally 3 mg/mL of abacavir and 1.5 mg/mL of lamivudine in *Diluent* prepared as follows. Transfer NLT 5 Tablets to a suitable volumetric flask. Add *Diluent* to about 50% of the final volume and shake for NMT 30 min to disperse the Tablets. Dilute with *Diluent* to volume. Pass through a suitable filter.

Sample solution: Nominally 0.3 mg/mL of abacavir and 0.15 mg/mL of lamivudine in *Diluent* from *Sample stock solution*

Chromatographic system

(See *Chromatography ⟨621⟩, System Suitability*.)

Mode: LC

Detector: UV 270 nm

Column: 4.6-mm × 15-cm; 3.5-µm packing L1

Column temperature: 40°

Flow rate: 1.5 mL/min

Injection volume: 10 µL

System suitability

Samples: *System suitability solution* and *Standard solution*

[Note—The relative retention times for lamivudine-*S*-oxide and lamivudine-*R*-oxide, in relation to the lamivudine peak, are 0.31 and 0.36, respectively; the relative retention times for lamivudine diastereomer and lamivudine are 0.88 and 1.0, respectively; *System suitability solution*.]

Suitability requirements

Resolution: NLT 1.0 between lamivudine-*S*-oxide and lamivudine-*R*-oxide; NLT 1.0 between lamivudine