Instrumental conditions
(See *Ultraviolet-Visible Spectroscopy* ⟨857⟩.)
Mode: UV
Analytical wavelength: Maximum absorbance at about 248 nm
Analysis
Samples: *Standard solution* and *Sample solution*
Determine the amount of hydrocortisone ($C_{21}H_{30}O_5$) dissolved.
Tolerances: NLT 70% (*Q*) of the labeled amount of hydrocortisone ($C_{21}H_{30}O_5$) is dissolved.

• **Uniformity of Dosage Units** ⟨905⟩
Procedure for content uniformity
Mobile phase, Internal standard solution, Standard solution, Chromatographic system, and **System suitability:** Proceed as directed in the *Assay*.
Sample solution: Nominally 0.1 mg/mL of hydrocortisone, prepared as follows. Transfer 1 Tablet to a suitable container, and add 0.3 mL of water directly onto the Tablet. Allow the Tablet to stand for about 5 min. Shake the container to break up the Tablet, and sonicate briefly to ensure complete disintegration. Add a few small glass beads and 50.0 mL of the *Internal standard solution* to the container. Shake the container for about 30 min. Dilute an accurately measured volume of the clear supernatant with a known, accurately measured volume of the *Internal standard solution* to obtain the desired concentration. Shake the contents of the container to mix.
Analysis
Samples: *Standard solution* and *Sample solution*
Calculate the percentage of the labeled amount of hydrocortisone ($C_{21}H_{30}O_5$) in the Tablet taken:

$$\text{Result} = (R_U/R_S) \times (C_S/C_U) \times 100$$

R_U = peak response ratio of hydrocortisone to the internal standard from the *Sample solution*
R_S = peak response ratio of hydrocortisone to the internal standard from the *Standard solution*
C_S = concentration of USP Hydrocortisone RS in the *Standard solution* (mg/mL)
C_U = nominal concentration of hydrocortisone in the *Sample solution* (mg/mL)
Acceptance criteria: Meet the requirements

ADDITIONAL REQUIREMENTS
• **Packaging and Storage:** Preserve in well-closed containers.
• **USP Reference Standards** ⟨11⟩
USP Hydrocortisone RS
USP Prednisone RS

Hydrocortisone and Acetic Acid Otic Solution

DEFINITION
Hydrocortisone and Acetic Acid Otic Solution is a solution of Hydrocortisone and Glacial Acetic Acid in a suitable nonaqueous solvent. It contains NLT 90.0% and NMT 120.0% of the labeled amount of hydrocortisone ($C_{21}H_{30}O_5$), and NLT 85.0% and NMT 130.0% of the labeled amount of acetic acid ($C_2H_4O_2$).

IDENTIFICATION
• **A.**
Analysis: Dilute 5 mL of Otic Solution with 10 mL of water, and adjust with 1 N sodium hydroxide to a pH of about 7. Add ferric chloride TS.
Acceptance criteria: A deep red color is produced, and it is destroyed by the addition of hydrochloric acid.
• **B.** The retention time of the major peak of the *Sample solution* corresponds to that of the *Standard solution*, both relative to the internal standard, as obtained in the *Assay* for *Acetic Acid*.
• **C.** The retention time of the major peak of the *Sample solution* corresponds to that of the *Standard solution*, as obtained in the *Assay* for *Hydrocortisone*.

ASSAY
• **Acetic Acid**
Internal standard solution: Dilute 2.0 mL of anisole with methanol to 100 mL.
Standard stock solution: 20 mg/mL of glacial acetic acid in methanol
Standard solution: 10 mg/mL of glacial acetic acid in methanol, prepared as follows. Transfer a sufficient volume of the *Standard stock solution* to a volumetric flask of suitable size, add 20% of the flask volume of the *Internal standard solution*, and dilute with methanol to volume.
Sample solution: Nominally 10 mg/mL of glacial acetic acid, prepared as follows. Transfer a sufficient volume of Otic Solution to a volumetric flask of suitable size, add 20% of the flask volume of the *Internal standard solution*, and dilute with methanol to volume.
Chromatographic system
(See *Chromatography* ⟨621⟩, *System Suitability*.)
Mode: GC
Detector: Flame ionization
Column: 2-mm × 1.8-m glass; packed with 20% liquid phase G35 on support S1A
Carrier gas: Nitrogen
Flow rate: 25 mL/min
Temperatures
Injection port: 180°
Detector: 220°
Column: See *Table 1*.

Table 1

Initial Temperature (°)	Temperature Ramp (°/min)	Final Temperature (°)	Hold Time at Final Temperature (min)
115	0	115	12
115	35	190	3

Injection volume: 4 µL
System suitability
Sample: *Standard solution*
[NOTE—The relative retention times for anisole and acetic acid are 1.0 and 1.5, respectively.]
Suitability requirements
Resolution: NLT 1.5 between anisole and acetic acid
Relative standard deviation: NMT 2.0%
Analysis
Samples: *Standard solution* and *Sample solution*
Calculate the percentage of the labeled amount of acetic acid ($C_2H_4O_2$) in the portion of Otic Solution taken:

$$\text{Result} = (R_U/R_S) \times (C_S/C_U) \times 100$$

R_U = peak response ratio of acetic acid to the internal standard from the *Sample solution*
R_S = peak response ratio of acetic acid to the internal standard from the *Standard solution*
C_S = concentration of glacial acetic acid in the *Standard solution* (mg/mL)
C_U = nominal concentration of acetic acid in the *Sample solution* (mg/mL)

USP Monographs