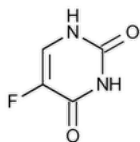


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Fluorouracil



$C_4H_3FN_2O_2$ 130.08
 2,4(1*H*,3*H*)-Pyrimidinedione, 5-fluoro-;
 5-Fluorouracil CAS RN®: 51-21-8; UNII: U3P01618RT.

DEFINITION

Fluorouracil contains NLT 98.0% and NMT 102.0% of fluorouracil ($C_4H_3FN_2O_2$), calculated on the dried basis.

[CAUTION—Great care should be taken to prevent inhaling particles of Fluorouracil and exposing the skin to it.]

IDENTIFICATION

Change to read:

- A. [▲ SPECTROSCOPIC IDENTIFICATION TESTS \(197\), Infrared Spectroscopy: 197M](#)▲ (CN 1-MAY-2020)

Change to read:

- B. [▲ SPECTROSCOPIC IDENTIFICATION TESTS \(197\), Ultraviolet-Visible Spectroscopy: 197U](#)▲ (CN 1-MAY-2020)

Medium: pH 4.7 acetate buffer prepared from 8.4 g of sodium acetate and 3.35 mL of glacial acetic acid mixed with water to make 1000 mL

Sample solution: 10 µg/mL in *Medium*

Acceptance criteria: Meets the requirements

- C. The retention time of the major peak of the *Sample solution* corresponds to that of the *Standard solution*, as obtained in the Assay.

ASSAY

PROCEDURE

Buffer: 6.8 g/L of monobasic potassium phosphate in water. Adjust with 5 M potassium hydroxide to a pH of 5.7 ± 0.1 .

Mobile phase: Acetonitrile and *Buffer* (5:95)

Standard solution: 10 µg/mL of [USP Fluorouracil RS](#) in water

Sample solution: 10 µg/mL of Fluorouracil in water

Chromatographic system

(See [Chromatography \(621\), System Suitability](#).)

Mode: LC

Detector: UV 254 nm

Column: 4.6-mm × 25-cm; 5-µm packing L1

Flow rate: 1.0 mL/min

Injection volume: 20 µL

System suitability

Sample: *Standard solution*

Suitability requirements

Relative standard deviation: NMT 0.73%, *Standard solution*

Tailing factor: NMT 1.5, *Standard solution*

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of fluorouracil ($C_4H_3FN_2O_2$) in the portion of Fluorouracil taken:

$$\text{Result} = (r_U/r_S) \times (C_S/C_U) \times 100$$

r_U = peak response from the *Sample solution*

r_S = peak response from the *Standard solution*

C_s = concentration of [USP Fluorouracil RS](#) in the *Standard solution* (µg/mL)

C_U = concentration of Fluorouracil in the *Sample solution* (µg/mL)

Acceptance criteria: 98.0%–102.0% on the dried basis

IMPURITIES

• **RESIDUE ON IGNITION (281):** NMT 0.1%

• **ORGANIC IMPURITIES**

Protect the *Standard solution* and *Sample solution* from light.

Mobile phase: 6.8 g/L of monobasic potassium phosphate in water. Adjust with 5 M potassium hydroxide to a pH of 5.7 ± 0.1 .

Standard solution: 0.1 µg/mL each of [USP Fluorouracil RS](#), [USP Fluorouracil Related Compound A RS](#), [USP Fluorouracil Related Compound B RS](#), and [USP Uracil RS](#), and 0.2 µg/mL of [USP Fluorouracil Related Compound E RS](#) in *Mobile phase*

Sample solution: 0.1 mg/mL of Fluorouracil in *Mobile phase*

Chromatographic system

(See [Chromatography \(621\)](#), [System Suitability](#).)

Mode: LC

Detector: UV 266 nm

Column: 4.6-mm × 25-cm; 5-µm packing L1

Flow rate: 1.0 mL/min

Injection volume: 20 µL

Run time: NLT 3 times the retention time of the fluorouracil peak

System suitability

Sample: *Standard solution*

Suitability requirements

Resolution: NLT 2 between the uracil and fluorouracil peaks

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of fluorouracil related compound A, fluorouracil related compound B, and uracil in the portion of Fluorouracil taken:

$$\text{Result} = (r_U/r_S) \times (C_S/C_U) \times 100$$

r_U = peak response of relevant fluorouracil related compound from the *Sample solution*

r_S = peak response of relevant fluorouracil related compound from the *Standard solution*

C_S = concentration of relevant fluorouracil related compound in the *Standard solution* (mg/mL)

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

Calculate the percentage of 5-methoxyuracil, fluorouracil related compound E, and any unspecified impurity in the portion of Fluorouracil taken:

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

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

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

C_S = concentration of [USP Fluorouracil RS](#) in the *Standard solution* (mg/mL)

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

F = relative response factor for each individual impurity (see [Table 1](#))

Acceptance criteria: See [Table 1](#). Disregard any impurity peaks less than 0.05%.

Table 1

Name	Relative Retention Time	Relative Response Factor	Acceptance Criteria, NMT (%)
Fluorouracil related compound A ^a	0.5	—	0.15



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