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## Fluorouracil Cream

### DEFINITION

Fluorouracil Cream contains NLT 90.0% and NMT 110.0% of the labeled amount of fluorouracil ( $C_4H_3FN_2O_2$ ). It may contain Sodium Hydroxide to adjust the pH.

### IDENTIFICATION

**Change to read:**

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

**Sample:** Dry a portion of Cream nominally equivalent to 50 mg of fluorouracil at a pressure NMT 0.7 kPa. Mix with 100 mL of ether. Decant, wash the residue with 50 mL of ether, and allow to air dry.

**Acceptance criteria:** Meets the requirements

- B. 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  $5.7 \pm 0.1$ .

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

**Standard solution:** 10  $\mu$ g/mL of [USP Fluorouracil RS](#) in water

**Sample stock solution:** Nominally equivalent to 0.1 mg/mL of fluorouracil prepared as follows. Transfer a portion of Cream, nominally equivalent to 10 mg of fluorouracil, into a 100-mL volumetric flask. Add 20 mL of methanol, and mix on a vortex mixer to dissolve. Dilute with water to volume.

**Sample solution:** 10  $\mu$ g/mL of fluorouracil in water, from *Sample stock solution*. Mix, and filter.

#### Chromatographic system

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

**Mode:** LC

**Detector:** UV 254 nm

**Column:** 4.6-mm  $\times$  25-cm; 5- $\mu$ m packing L1

**Flow rate:** 1.0 mL/min

**Injection volume:** 20  $\mu$ L

#### 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 the labeled amount of fluorouracil ( $C_4H_3FN_2O_2$ ) in the portion of Cream 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* ( $\mu$ g/mL)

$C_u$  = nominal concentration of fluorouracil in the *Sample solution* ( $\mu$ g/mL)

**Acceptance criteria:** 90.0%–110.0%

### IMPURITIES

#### • LIMIT OF UREA

**Standard solution:** 0.05 mg/mL of [USP Urea RS](#) in water

**Sample solution:** Nominally equivalent to 5 mg/mL of fluorouracil prepared as follows. Shake a portion of Cream containing 100 mg of fluorouracil with 10 mL of water for 5 min. Add 10 mL of alcohol, and mix. Pass through a glass-fiber filter, and use the filtrate.

#### Chromatographic system

(See [Chromatography \(621\)](#), [Thin-Layer Chromatography](#).)

**Mode:** TLC

**Adsorbent:** Chromatographic silica gel

**Application volume:** 20  $\mu$ L

**Developing solvent system:** Ethyl acetate, acetone, and water (70:40:10)

**Reagent solution:** Prepare a 10-mg/mL solution of *p*-dimethylaminobenzaldehyde in alcohol. Prepare a mixture of this solution and hydrochloric acid (10:1).

#### Analysis

**Samples:** Standard solution and Sample solution

**Procedure:** Develop with Developing solvent system, followed by air drying. Spray the plate at least twice with Reagent solution, and dry the plate in an oven at 100° until the maximum intensity of the spots is obtained. Examine the plate under daylight.

**Acceptance criteria:** NMT 1.0%; the spot of urea in the Sample solution is not more intense than the spot of urea from the Standard solution.

#### PERFORMANCE TESTS

- [MINIMUM FILL \(755\)](#): Meets the requirements

#### SPECIFIC TESTS

- [MICROBIAL ENUMERATION TESTS \(61\)](#) and [TESTS FOR SPECIFIED MICROORGANISMS \(62\)](#): It meets the requirements of the tests for absence of *Staphylococcus aureus* and *Pseudomonas aeruginosa*.

#### ADDITIONAL REQUIREMENTS

- **PACKAGING AND STORAGE:** Preserve in tight containers, and store at controlled room temperature.

- [USP REFERENCE STANDARDS \(11\)](#):

[USP Fluorouracil RS](#)

[USP Urea RS](#)

Urea.

$\text{CH}_4\text{N}_2\text{O}$  60.06

**Auxiliary Information** - Please [check for your question in the FAQs](#) before contacting USP.

Topic/Question	Contact	Expert Committee
FLUOROURACIL CREAM	<a href="#">Documentary Standards Support</a>	SM32020 Small Molecules 3

**Chromatographic Database Information:** [Chromatographic Database](#)

#### Most Recently Appeared In:

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