Mercaptopurine Tablets

» Mercaptopurine Tablets contain not less than 93.0 percent and not more than 110.0 percent of the labeled amount of mercaptopurine ($C_5H_4N_4S \cdot H_2O$).

Packaging and storage—Preserve in well-closed containers.

Labeling—When more than one *Dissolution* test is given, the labeling states the *Dissolution* test used only if *Test 1* is not used.

USP Reference standards ⟨11⟩**—***USP Mercaptopurine RS.*

Identification—

A: The UV absorption spectrum of the solution of Tablets employed for measurement of absorbance in the *Assay* exhibits a maximum at 325 ± 2 nm, and the ratio A_{255} / A_{325} does not exceed 0.09.

B: Triturate a quantity of finely powdered Tablets, equivalent to about 600 mg of mercaptopurine, with three 25-mL portions of hot alcohol. Filter the hot alcohol extracts, and evaporate the filtrate on a steam bath to dryness. Add to the residue 5 mL of sodium hydroxide solution (1 in 33), agitate well, and filter: the clear filtrate so obtained responds to *Identification* test *B* under *Mercaptopurine.*

Change to read:

Dissolution ⟨711⟩**—**

TEST 1—

Medium: 0.1 N hydrochloric acid; 900 mL.

Apparatus 2: 50 rpm.

Time: 60 minutes.

Determine the amount of mercaptopurine ($C_5H_4N_4S$) dissolved by employing the following method.

Mobile phase—Prepare a filtered and degassed solution of 0.1% acetic acid in water. Make adjustments if necessary (see *System Suitability* under *Chromatography* ⟨621⟩).

Chromatographic system (see *Chromatography* ⟨621⟩)—The liquid chromatograph is equipped with a 230-nm detector and a 3.9-mm × 15-cm column that contains packing L1. The flow rate is about 2.5 mL per minute. Chromatograph replicate injections of the Standard solution prepared as described below for *Procedure,* and record the peak responses as directed for *Procedure:* the retention time for mercaptopurine is not less than 4 minutes, and the relative standard deviation is not more than 2.0%.

Procedure—Inject a volume (about 10 µL) of a filtered portion of the solution under test into the chromatograph, record the chromatogram, and measure the response for the major peak. Calculate the quantity of $C_5H_4N_4S$ dissolved in comparison with a Standard solution having a known concentration of USP Mercaptopurine RS in the same *Medium* and similarly chromatographed.

Tolerances—Not less than 80% *(Q)* of the labeled amount of $C_5H_4N_4S$ is dissolved in 60 minutes.

TEST 2—If the product complies with this test, the labeling indicates that it meets USP *Dissolution Test 2.*

Medium, Apparatus, Chromatographic system, and *Procedure*—Proceed as directed for *Test 1.*

Time: 120 minutes.

Tolerances—Not less than 80% *(Q)* of the labeled amount of $C_5H_4N_4S \cdot H_2O$ (RB 1-Dec-2009) is dissolved in 120 minutes.

Uniformity of dosage units ⟨905⟩**:** meet the requirements.

Assay—Weigh and finely powder not fewer than 20 Tablets. Accurately weigh a portion of the powder, equivalent to about 50 mg of mercaptopurine, and transfer to a 100-mL volumetric flask. Add 20 mL of water and 1.5 mL of 1 N sodium hydroxide, and swirl for not more than 5 minutes. Dilute with water to volume, mix, and filter, discarding the first 20 mL of the filtrate. Dilute an accurately measured portion of the filtrate quantitatively and stepwise with 0.1 N hydrochloric acid to give a final concentration of about 5 µg per mL. Dissolve an accurately weighed quantity of USP Mercaptopurine RS in a mixture of 10 mL of water and 1 mL of 1 N sodium hydroxide contained in a 100-mL volumetric flask, dilute with water to volume, and mix. Dilute an aliquot of this solution quantitatively and stepwise with 0.1 N hydrochloric acid to obtain a Standard solution having a known concentration of about 5 µg per mL. Concomitantly determine the absorbances of both solutions in 1-cm cells at the wavelength of maximum absorbance at about 325 nm, with a suitable spectrophotometer, using 0.1 N hydrochloric acid as the blank. Calculate the quantity, in mg, of mercaptopurine ($C_5H_4N_4S \cdot H_2O$) in the portion of Tablets taken by the formula:

$$(170.19/152.18)10C(A_U / A_S)$$

in which 170.19 and 152.18 are the molecular weights of mercaptopurine monohydrate and anhydrous mercaptopurine, respectively; C is the concentration, in µg per mL, of USP Mercaptopurine RS in the Standard solution; and A_U and A_S are the absorbances of the solution from Tablets and the Standard solution, respectively.