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## Acetaminophen Suppositories

### DEFINITION

Acetaminophen Suppositories contain NLT 90.0% and NMT 110.0% of the labeled amount of acetaminophen ( $C_8H_9NO_2$ ).

### IDENTIFICATION

- **A.** The retention time of the major peak of the *Sample solution* corresponds to that of the *Standard solution*, as obtained in the Assay.
- **B.** [THIN-LAYER CHROMATOGRAPHIC IDENTIFICATION TEST \(201\)](#).

**Sample solution:** Transfer the equivalent of 20 mg of acetaminophen from a portion of Suppositories to a beaker. Add 20 mL of methanol and heat on a steam bath until melted. Remove the beaker from the steam bath, allow to cool with occasional stirring, and filter. Use the clear filtrate.

#### Chromatographic system

**Developing solvent system:** Methylene chloride and methanol (4:1)

**Acceptance criteria:** Meet the requirements

### ASSAY

#### PROCEDURE

**Mobile phase:** Methanol and water (1:3)

**Standard solution:** 0.01 mg/mL of [USP Acetaminophen RS](#) in *Mobile phase*

**Sample stock solution:** Nominally 0.5 mg/mL of acetaminophen prepared as follows. Tare a small dish and a glass rod, place NLT 5 Suppositories in the dish, heat gently on a steam bath until melted, stir, cool while stirring, and weigh. Transfer a weighed portion of the mass, equivalent to 100 mg of acetaminophen, to a separator, add 30 mL of solvent hexane, and dissolve. Add 30 mL of water, shake gently, and allow the phases to separate. If an emulsion forms, allow sufficient time for it to separate. Transfer the aqueous layer to a 200-mL volumetric flask, and wash the solvent hexane in the separator with three 30-mL portions of water, adding the washings to the volumetric flask. Dilute with *Mobile phase* to volume.

**Sample solution:** Nominally 0.01 mg/mL of acetaminophen in *Mobile phase* from the *Sample stock solution*. Pass a portion of this solution through a filter of 0.5- $\mu$ m or finer pore size, discarding the first 10 mL of the filtrate. Use the clear filtrate.

#### Chromatographic system

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

**Mode:** LC

**Detector:** UV 243 nm

**Column:** 3.9-mm  $\times$  30-cm; packing L1

**Flow rate:** 1.5 mL/min

**Injection volume:** 10  $\mu$ L

#### System suitability

**Sample:** *Standard solution*

#### Suitability requirements

**Tailing factor:** NMT 2

**Relative standard deviation:** NMT 2.0%

#### Analysis

**Samples:** *Standard solution* and *Sample solution*

Calculate the percentage of the labeled amount of acetaminophen ( $C_8H_9NO_2$ ) in the portion of Suppositories 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 Acetaminophen RS](#) in the *Standard solution* (mg/mL)

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

**Acceptance criteria:** 90.0%–110.0%

IMPURITIES

- [4-AMINOPHENOL IN ACETAMINOPHEN-CONTAINING DRUG PRODUCTS \(227\)](#).

**Buffer:** 4.0 g/L of sodium citrate dihydrate and 1.5 g/L of anhydrous citric acid, in water

**Diluent:** Buffer and acetonitrile (9:1)

**Sample stock solution:** Approximately 12–13 mg/mL of acetaminophen prepared as follows. Transfer an appropriate number of whole Suppositories to a suitable volumetric flask. Add *Diluent* until the flask is about half filled and sonicate for 1 h with frequent swirling. Allow to cool and then dilute with *Diluent* to volume.

**Sample solution:** Approximately 4.8–5.2 mg/mL of acetaminophen in *Diluent* from the *Sample stock solution* prepared as follows. Pipet 20.0 mL of the *Sample stock solution* into a 50-mL volumetric flask and dilute with *Diluent* to volume.

**Standard stock solution:** Prepare as indicated in the chapter.

**Standard solution:** Add 20.0 mL of the *Sample stock solution* and 15.0 mL of the *Standard stock solution* to a 50-mL volumetric flask, and dilute with *Diluent* to volume.

**Acceptance criteria:** Meet the requirements

ADDITIONAL REQUIREMENTS

- **PACKAGING AND STORAGE:** Preserve in tight containers, and store at controlled room temperature or in a cool place.
- [USP REFERENCE STANDARDS \(11\)](#).  
[USP Acetaminophen RS](#)

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

Topic/Question	Contact	Expert Committee
ACETAMINOPHEN SUPPOSITORIES	<a href="#">Documentary Standards Support</a>	SM22020 Small Molecules 2

Chromatographic Database Information: [Chromatographic Database](#)

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