

System suitability—

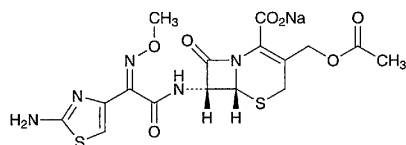
System performance: Dissolve 2.5 mg each of Cefoselis Sulfate Reference Standard and cefoselis-3-ene-isomer in 10 mL of 0.1 mol/L phosphate buffer solution, pH 7.0. When the procedure is run with 5 μ L of this solution under the above operating conditions, cefoselis-3-ene-isomer and cefoselis are eluted in this order with the resolution between these peaks being not less than 2.9.

System repeatability: When the test is repeated 6 times with 5 μ L of the standard solution under the above operating conditions, the relative standard deviation of the peak areas of cefoselis is not more than 1.0%.

Containers and storage Containers—Hermetic containers.
Storage—Light-resistant, and in a cold place.

Cefotaxime Sodium

セフトキシムナトリウム


 $C_{16}H_{16}N_5NaO_7S_2$: 477.45

Monosodium (6*R*,7*R*)-3-acetoxymethyl-7-[(*Z*)-2-(2-aminothiazol-4-yl)-2-methoxyiminoacetyl-amino]-8-oxo-5-thia-1-azabicyclo[4.2.0]oct-2-ene-2-carboxylate [64485-93-4]

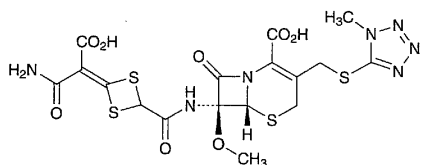
Cefotaxime Sodium conforms to the requirements of Cefotaxime Sodium in the Requirements for Antibiotic Products of Japan.

Description Cefotaxime Sodium occurs as a white to light yellowish white crystalline powder.

It is freely soluble in water, sparingly soluble in methanol, very slightly soluble in ethanol (95), and practically insoluble in diethyl ether.

Cefotetan

セフトタン


 $C_{17}H_{17}N_7O_8S_4$: 575.62

(6*R*,7*R*)-7-[[4-(Carbamoylcarboxymethylene)-1,3-dithietane-2-carbonyl]amino]-7-methoxy-3-(1-methyl-1*H*-tetrazol-5-ylsulfanylmethyl)-8-oxo-5-thia-1-azabicyclo[4.2.0]oct-2-ene-2-carboxylic acid [69712-56-7]

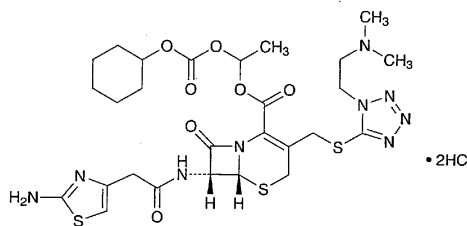
Cefotetan conforms to the requirements of Cefotetan in the Requirements for Antibiotic Products of Japan.

Description Cefotetan occurs as a white to light yellowish white crystalline powder.

It is sparingly soluble in methanol, slightly soluble in water and in ethanol (95), and practically insoluble in diethyl ether.

Cefotiam Hexetil Hydrochloride

塩酸セフトチアムヘキセチル


 $C_{27}H_{37}N_9O_7S_3 \cdot 2HCl$: 768.76

(*RS*)-1-Cyclohexyloxycarbonyloxyethyl (6*R*,7*R*)-7-[2-(2-aminothiazol-4-yl)acetyl-amino]-3-[1-(2-dimethylaminoethyl)-1*H*-tetrazol-5-ylsulfanylmethyl]-8-oxo-5-thia-1-azabicyclo[4.2.0]oct-2-ene-2-carboxylate dihydrochloride [95789-30-3]

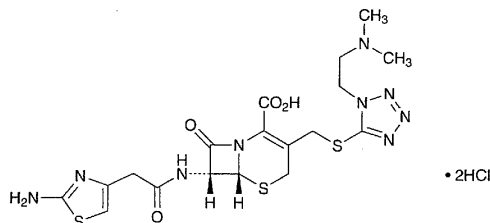
Cefotiam Hexetil Hydrochloride conforms to the requirements of Cefotiam Hexetil Hydrochloride in the Requirements for Antibiotic Products of Japan.

Description Cefotiam Hexetil Hydrochloride occurs as a white to light yellow powder. It has a faint characteristic odor and a bitter taste.

It is very soluble in water, in 0.1 mol/L hydrochloric acid TS, in methanol and in ethanol (95), freely soluble in dimethylsulfoxide, and practically insoluble in diethyl ether.

Cefotiam Hydrochloride

塩酸セフトチアム


 $C_{18}H_{23}N_9O_4S_3 \cdot 2HCl$: 598.55

(6*R*,7*R*)-7-[2-(2-Aminothiazol-4-yl)acetyl-amino]-3-[1-(2-dimethylaminoethyl)-1*H*-tetrazol-5-ylsulfanylmethyl]-8-oxo-5-thia-1-azabicyclo[4.2.0]oct-2-ene-2-carboxylic acid dihydrochloride [66309-69-1]

Cefotiam Hydrochloride contains not less than 790 μg (potency) per mg, calculated on the anhydrous basis. The potency of Cefotiam Hydrochloride is expressed as mass (potency) of cefotiam ($\text{C}_{18}\text{H}_{23}\text{N}_9\text{O}_4\text{S}_3$: 525.63).

Description Cefotiam Hydrochloride occurs as white to light yellow, crystals or crystalline powder.

It is freely soluble in water, in methanol and in formamide, slightly soluble in ethanol (95), and practically insoluble in acetonitrile.

Identification (1) Determine the absorption spectrum of a solution of Cefotiam Hydrochloride (1 in 50,000) as directed under the Ultraviolet-visible Spectrophotometry, and compare the spectrum with the Reference Spectrum or the spectrum of Cefotiam Hydrochloride Reference Standard: both spectra exhibit similar intensities of absorption at the same wavelength.

(2) Determine the infrared absorption spectrum of Cefotiam Hydrochloride as directed in the potassium chloride disk method under the Infrared Spectrophotometry, and compare the spectrum with the Reference Spectrum or the spectrum of Cefotiam Hydrochloride Reference Standard: both spectra exhibit similar intensities of absorption at the same wave numbers.

(3) Determine the spectrum of a solution of Cefotiam Hydrochloride in heavy water for nuclear magnetic resonance spectroscopy (1 in 10) as directed under the Nuclear Magnetic Resonance Spectroscopy (^1H), using sodium 3-trimethylsilylpropanesulfonate for nuclear magnetic resonance spectroscopy as an internal reference compound: it exhibits single signals at around δ 3.1 ppm and at around δ 6.7 ppm, respectively. The ratio of integrated intensity of each signal is about 6:1.

(4) Dissolve 0.1 g of Cefotiam Hydrochloride in 5 mL of dilute nitric acid, and immediately add 1 mL of silver nitrate TS: a white precipitate is formed.

Optical rotation $[\alpha]_{\text{D}}^{20}$: +60 – +72° (1 g calculated on the anhydrous bases, water, 100 mL, 100 mm).

pH Dissolve 1.0 g of Cefotiam Hydrochloride in 10 mL of water: the pH of the solution is between 1.2 and 1.7.

Purity (1) Clarity of solution—Dissolve 1.0 g of Cefotiam Hydrochloride in 10 mL of water: the solution is clear, and colorless to yellow.

(2) Heavy metals—To 1.0 g of Cefotiam Hydrochloride add 1 mL of sulfuric acid, and heat gently to carbonize. After cooling, add 10 mL of a solution of magnesium nitrate hexahydrate in ethanol (95) (1 in 10), fire the ethanol to burn, then heat gradually to incinerate. If a carbonized residue still retains, moisten the residue with a little amount of sulfuric acid, and ignite again to incinerate. After cooling, add 2 mL of hydrochloric acid to the residue, heat on a water bath to dissolve, then heat to dryness. Add 10 mL of water, and heat to dissolve. After cooling, add ammonia TS dropwise to adjust to pH 3 – 4, if necessary, filter, wash the residue on the filter with 10 mL of water, transfer the filtrate and washings into a Nessler tube, add water to make 50 mL, and use this solution as the test solution. Prepare the control solution with 2.0 mL of Standard Lead Solution in the same manner as for preparation of the test solution (not more than 20 ppm).

(3) Arsenic—Incinerate 1.0 g of Cefotiam Hydrochloride

according to Method 4. After cooling, add 10 mL of dilute hydrochloric acid to the residue, heat to dissolve on the water bath, and use this solution as the test solution. Perform the test using Apparatus B (not more than 2 ppm).

Water Not more than 7.0% (0.25 g, volumetric titration, direct titration. Use a mixture of formamide for water determination and methanol for water determination (2:1) instead of methanol for water determination).

Assay Weigh accurately an amount of Cefotiam Hydrochloride and Cefotiam Hydrochloride Reference Standard, equivalent to about 0.1 g (potency), and dissolve each in the mobile phase to make exactly 100 mL, and use these solutions as the sample solution and the standard solution, respectively. Perform the test with exactly 10 μL each of the sample solution and the standard solution as directed under the Liquid Chromatography according to the following conditions, and calculate the peak areas, A_{T} and A_{S} , of cefotiam of these solutions.

$$\begin{aligned} \text{Amount } [\mu\text{g (potency)}] \text{ of cefotiam } (\text{C}_{18}\text{H}_{23}\text{N}_9\text{O}_4\text{S}_3) \\ = \text{amount } [\text{mg (potency)}] \text{ of Cefotiam Hydrochloride} \\ \text{Reference Standard} \times \frac{A_{\text{T}}}{A_{\text{S}}} \times 1000 \end{aligned}$$

Operating conditions—

Detector: An ultraviolet absorption photometer (wavelength: 254 nm).

Column: A stainless steel column 4.0 mm in inside diameter and 125 mm in length, packed with octadecylsilylanized silica gel for liquid chromatography (5 μm in particle diameter).

Column temperature: A constant temperature of about 25°C.

Mobile phase: To 800 mL of 0.05 mol/L disodium hydrogenphosphate TS add 0.05 mol/L potassium dihydrogenphosphate TS to adjust the pH to 7.7. To 440 mL of this solution add 60 mL of acetonitrile.

Flow rate: Adjust the flow rate so that the retention time of cefotiam is about 14 minutes.

System suitability—

System performance: Dissolve 0.04 g of orcine in 10 mL of the standard solution. When the procedure is run with 10 μL of the standard solution under the above operating conditions, orcine and cefotiam are eluted in this order with the resolution between these peaks being not less than 5.

System repeatability: When the test is repeated 6 times with 10 μL of the standard solution under the above operating conditions, the relative standard deviation of the peak areas of cefotiam is not more than 1.0%.

Containers and storage Containers—Hermetic containers.

Cefoxitin Sodium

セフォキシチンナトリウム

