ethanol (99.5) (9 in 10). Combine the extracts, wash with 20 mL of petroleum benzin saturated with diluted ethanol (99.5) (9 in 10), and evaporate on a water bath to dryness. To the residue add 3 mL of semicarbazide acetate TS, and boil vigorously for 2 hours under a reflux condenser. After cooling, filter by suction, and collect the precipitate. Wash the precipitate on the filter with four 10-mL portions of petroleum benzin and four 5-mL portions of water, and dry at 105°C for 3 hours: it melts between 208°C and 217°C.

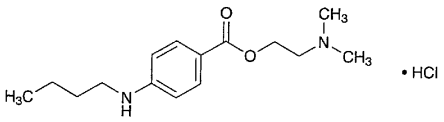
Assay Dissolve an accurately measured volume of Testosterone Propionate Injection, equivalent to about 0.05 g of testosterone propionate ($C_{22}H_{32}O_3$), in chloroform to make exactly 50 mL. Pipet 4 mL of this solution, dissolve in chloroform to make exactly 100 mL, and use this solution as the sample solution. Weigh accurately about 0.05 g of Testosterone Propionate Reference Standard, previously dried in a desiccator (in vacuum, phosphorus (V) oxide) for 4 hours, and prepare the standard solution in the same manner as directed for the preparation of the sample solution. Pipet 5 mL each of the sample solution and the standard solution, and treat each solution as follows: Add 10 mL of isoniazid TS, exactly measured, and methanol to make exactly 20 mL, and allow to stand for 45 minutes. Perform the test with these solutions as directed under the Ultraviolet-visible Spectrophotometry, using a solution prepared with 5 mL of chloroform in the same manner as the blank. Determine the absorbances, A_T and A_S, of the subsequent solutions of the sample solution and the standard solution at 380 nm.

Amount (mg) of testosterone propionate ($C_{22}H_{32}O_3$)
= amount (mg) of Testosterone Propionate Reference Standard
$\times \frac{A_T}{A_S}$

Containers and storage Containers—Hermetic containers.

Tetracaine Hydrochloride

塩酸テトラカイン



$C_{15}H_{24}N_2O_2$.HCl: 300.82
2-(Dimethylamino)ethyl 4-(butylamino)benzoate monohydrochloride [*136-47-0*]

Tetracaine Hydrochloride, when dried, contains not less than 98.5% of $C_{15}H_{24}N_2O_2$.HCl.

Description Tetracaine Hydrochloride occurs as white crystals or crystalline powder. It is odorless, and has a slightly bitter taste followed by a sense of numbness on the tongue.

It is very soluble in formic acid, freely soluble in water, soluble in ethanol (95), sparingly soluble in ethanol (99.5), slightly soluble in acetic anhydride, and practically insoluble in diethyl ether.

A solution of Tetracaine Hydrochloride (1 in 10) is neutral.

Melting point: about 148°C

Identification (1) Dissolve 0.5 g of Tetracaine Hydrochloride in 50 mL of water, add 5 mL of ammonia TS, shake, and allow to stand in a cold place. Collect the precipitate, wash with water until the washings is neutral, and dry in a desiccator (silica gel) for 24 hours: it melts between 42°C and 44°C.

(2) Dissolve 0.1 g of Tetracaine Hydrochloride in 8 mL of water, and add 3 mL of ammonium thiocyanate TS: a crystalline precipitate is produced. Collect the precipitate, recrystallize from water, and dry at 80°C for 2 hours: it melts between 130°C and 132°C.

(3) Determine the absorption spectrum of a solution of Tetracaine Hydrochloride in ethanol (99.5) (1 in 200,000) as directed under the Ultraviolet-visible Spectrophotometry, and compare the spectrum with the Reference Spectrum: both spectra exhibit similar intensities of absorption at the same wavelengths.

(4) A solution of Tetracaine Hydrochloride (1 in 10) responds to the Qualitative Tests for chloride.

Purity Heavy metals—Proceed with 1.0 g of Tetracaine Hydrochloride according to Method 1, and perform the test. Prepare the control solution with 2.0 mL of Standard Lead Solution (not more than 20 ppm).

Loss on drying Not more than 1.0% (1 g, 105°C, 4 hours).

Residue on ignition Not more than 0.10% (1 g).

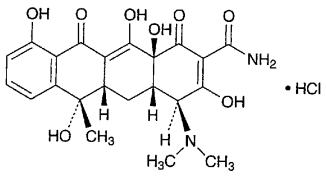
Assay Weigh accurately about 0.5 g of Tetracaine Hydrochloride, previously dried, dissolve in 2 mL of formic acid, add 80 mL of acetic anhydride, allow to stand at 30°C on a water bath for 15 minutes, cool, and titrate with 0.1 mol/L perchloric acid VS (potentiometric titration). Perform a blank determination, and make any necessary correction.

Each mL of 0.1 mol/L perchloric acid VS
= 30.083 mg of $C_{15}H_{24}N_2O_2$.HCl

Containers and storage Containers—Tight containers.

Tetracycline Hydrochloride

塩酸テトラサイクリン



$C_{22}H_{24}N_2O_8$.HCl: 480.90
(4*S*,4a*S*,5a*S*,6*S*,12a*S*)-4-Dimethylamino-1,4,4a,5,5a,6,11,12a-octahydro-3,6,10,12,12a-pentahydroxy-6-methyl-1,11-dioxonaphthacene-2-carboxamide monohydrochloride [*64-75-5*]

Tetracycline Hydrochloride contains not less than 900 μg (potency) per mg, calculated on the dried basis. The potency of Tetracycline Hydrochloride is expressed as mass (potency) of tetracycline hydrochloride ($C_{22}H_{24}N_2O_8$ .HCl).

Description Tetracycline Hydrochloride occurs as a yellow to pale brownish yellow crystalline powder.

It is freely soluble in water, and sparingly soluble in ethanol (95).

Identification **(1)** Determine the absorption spectrum of a solution of Tetracycline Hydrochloride (1 in 62,500) as directed under the Ultraviolet-visible Spectrophotometry, and compare the spectrum with the Reference Spectrum or the spectrum of Tetracycline Hydrochloride Reference Standard: both spectra exhibit similar intensities of absorption at the same wavelength.

(2) Determine the infrared absorption spectrum of Tetracycline 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 Tetracycline Hydrochloride Reference Standard: both spectra exhibit similar intensities of absorption at the same wave numbers.

(3) A solution of Tetracycline Hydrochloride (1 in 100) responds to the Qualitative Test (2) for chloride.

pH Dissolve 1.0 g of Tetracycline Hydrochloride in 100 mL of water: the pH of the solution is between 1.8 and 2.8.

Purity **(1)** Heavy metals—Proceed with 1.0 g of Tetracycline Hydrochloride according to Method 2, and perform the test. Prepare the control solution with 1 mL of Standard Lead Solution (not more than 10 ppm).

(2) Arsenic—Prepare the test solution with 1.0 g of Tetracycline Hydrochloride according to Method 4, and perform the test using Apparatus B (not more than 2 ppm).

(3) Related substances—Dissolve 0.025 g of Tetracycline Hydrochloride in 50 mL of 0.01 mol/L hydrochloric acid TS, and use this solution as the sample solution. Pipet 3 mL of the sample solution, add 0.01 mol/L hydrochloric acid TS to make exactly 100 mL, and use this solution as the standard solution. Perform the test with 20 μL each of the sample solution and the standard solution as directed under the Liquid Chromatography according to the following conditions, and calculate the areas of each peak by the automatic integration method: the peak areas other than tetracycline from the sample solution is not more than the peak area of tetracycline from the standard solution, and the total of the peak areas other than tetracycline from the sample solution is not more than 3 times of the peak area of tetracycline from the standard solution.

Operating conditions—

Detector, column, column temperature, mobile phase, and flow rate: Proceed as directed in the operating conditions in the Assay.

Time span of measurement: About 7 times as long as the retention time of tetracycline after the solvent peak.

System suitability—

Test for required detection: Pipet 3 mL of the standard solution, add 0.1 mol/L hydrochloric acid TS to make exactly 100 mL, and confirm that the peak area of tetracycline obtained from 20 μL of this solution is equivalent to 1 to 5% of that of tetracycline obtained from 20 μL of the standard solution.

System performance: Proceed as directed in the system suitability in the Assay.

System repeatability: When the test is repeated 6 times with 20 μL of the standard solution under the above operating conditions, the relative standard deviation of the peak areas of tetracycline is not more than 1.0%.

Loss on drying Not more than 2.0% (1 g, in vacuum, 60°C, 3 hours).

Residue on ignition Not more than 0.5% (1.0 g).

Assay Weigh accurately an amount of Tetracycline Hydrochloride and Tetracycline Hydrochloride Reference Standard, equivalent to about 0.025 g (potency), and dissolve each in 0.1 mol/L hydrochloric acid TS to make exactly 50 mL, and use these solutions as the sample solution and the standard solution, respectively. Perform the test with exactly 20 μL each of these solutions as directed under the Liquid Chromatography according to the following conditions, and calculate the peak area, A_T and A_S, of tetracycline of each solution.

$$\text{Amount [}\mu\text{g (potency)] of } C_{22}H_{24}N_2O_8.HCl = \text{amount [mg (potency)] of Tetracycline Hydrochloride Reference Standard} \times \frac{A_T}{A_S} \times 1000$$

Operating conditions—

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

Column: A stainless steel column 4 mm in inside diameter and 25 cm in length, packed with stylene-divinylbenzene copolymer for liquid chromatography (0.01 μm in pore diameter).

Column temperature: A constant temperature of about 60°C.

Mobile phase: Dissolve 3.5 g of dipotassium hydrogenphosphate, 2.0 g of tetrabutylammonium hydrogensulfate and 0.4 g of disodium dihydrogen ethylenediamine tetraacetate dihydrate in 300 mL of water, adjust to pH 9.0 with sodium hydroxide TS, add 90.0 g of *t*-butanol, and add water to make 1000 mL.

Flow rate: Adjust the flow rate so that the retention time of tetracycline is about 5 minutes.

System suitability—

System performance: Dissolve 0.05 g of Tetracycline Hydrochloride Reference Standard in water to make 25 mL. Heat 5 mL of this solution on a water bath for 60 minutes, then add water to make 25 mL. When the procedure is run with 20 μL of this solution under the above operating conditions, the retention time of 4-epitetracycline is about 3 minutes, and 4-epitetracycline and tetracycline are eluted in this order with the resolution between these peaks being not less than 2.5.

System repeatability: When, the test is repeated 6 times with 20 μL of the standard solution under the above operating conditions, the relative standard deviation of the peak areas of tetracycline is not more than 1.0%.

Containers and storage Containers—Tight containers.

Storage—Light-resistant.