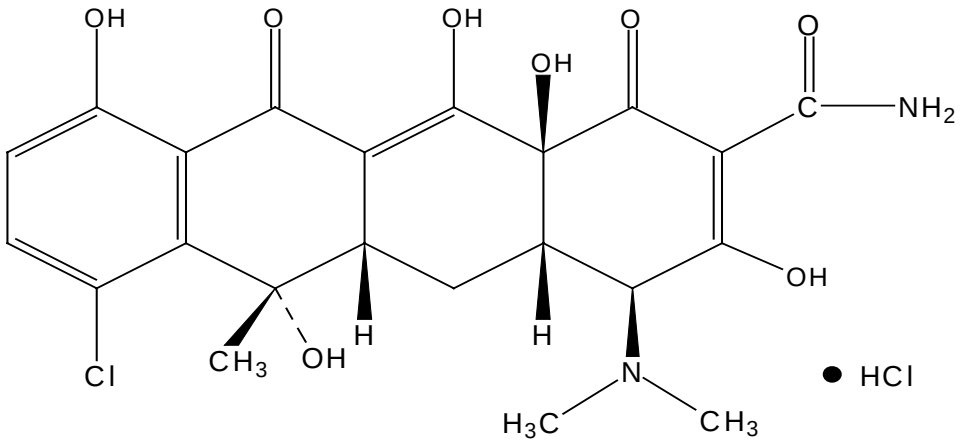
CHLORTETRACYCLINE HYDROCHLORIDE
Sigma Prod. No. C4881

ProductInformation



CAS NUMBER: 64-72-2
SYNONYMS: aureomycin; aureocycline; auxeomycin; biomycin; 7-chlorotetracycline

PHYSICAL DESCRIPTION:

Appearance: Yellow to yellow-tan powder
Molecular formula: $C_{22}H_{23}ClN_2O_8 \bullet HCl$
Molecular weight: 515.3
Potency values (ranging from 940 to 960 µg/mg) are provided by our supplier; the bioassay does not distinguish between chlortetracycline and tetracycline[1]
Melting point: decomposes above 210°C[2]
λ_{max} (in 0.1 N HCl) = 230, 262.5, 367.5; λ_{max} (in 0.1 N NaOH) = 255, 285 and 345 nm.[3]
pK_a values = 3.3, 7.4 and 9.3 at 25°C.[4]

STORAGE / STABILITY AS SUPPLIED:

If stored frozen, chlortetracycline hydrochloride is expected to remain stable at least four years.[1,5]

SOLUBILITY / SOLUTION STABILITY:

The product is tested in 1 M NaOH, giving a clear yellow to brown solution at 50 mg/mL. Its solubility at room temperature in water is reportedly about 8.6 mg/mL, in methanol, 17.4 mg/mL and in ethanol, 1.7 mg/mL. It is soluble in solutions of alkali hydroxides and carbonates.[3] It is practically insoluble in acetone and other organic solvents.[5]

For use as a reference, the U.S. Pharmacopeia notes that a stock solution prepared in 0.01 N HCl should be stored refrigerated and used within 4 days.[6]

GENERAL REMARKS:

Chlortetracycline hydrochloride has antimicrobial action similar to tetracycline hydrochloride, but it is somewhat less active against many Gram-negative organisms. It was first isolated from the culture of Streptomyces aureofaciens; its preparation and sale were under patent in 1949 and 1959.[3,7]
The biochemical literature has many references to the product, but an excellent review was published by Schwartzman et al.[8] Analytical data are also published in excellent resource books.[4,9]

HPLC PROTOCOL[5]

Column: Vydac C18 25 cm x 4.5 mm ID particle size 5 µm
Mobile Phases:

A: 0.1% H_3PO_4 in water	85%
B: 0.1% H_3PO_4 in acetonitrile	15%

Pressure: 2200 psi Flow Rate: 1.5 mL/min
Solvent: Mobile phase A, 1 mg/mL Volume Injected: 10 µL
Detection: 360 nm
Retention Time: approx. 12 minutes for major peak
approx. 4 min for tetracycline (major impurity)

REFERENCES:

1. Supplier data.
2. Sigma Material Safety Data Sheet (MSDS).
3. *Merck Index*, 12th ed., #2245 (1996).
4. *Clarke's Isolation and Identification of Drugs*, 2nd ed., Moffatt, A.C., Ed., (Pharmaceutical Press, 1988), p. 463.
5. Sigma quality control data.
6. *U. S. Pharmacopeia*, XXIII, p. 1693 (1995).
7. *Martindale: The Extra Pharmacopoeia*, 31st ed., p. 206 (1996).
8. Schwartzman, G., *et al*., *Analytical Profiles of Drug Substances*, K. Florey, Ed. (Academic Press), Vol. 8, 101-137 (1979).
9. *Instrumental Data for Drug Analysis*, Vol. 1-5 (1987), Mills *et al*., Eds.