CHLORTETRACYCLINE HYDROCHLORIDE
Sigma Prod. No. C4881

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_{2}O_{8} \cdot \text{HCl}
Molecular weight: 515.3
Potency values (ranging from 940 to 960 \( \mu \text{g/mg} \)) are provided by our supplier; the bioassay does not distinguish between chlortetracycline and tetracycline
Melting point: decomposes above 210°C
\( \lambda_{\text{max}} \) (in 0.1 N HCl) = 230, 262.5, 367.5; \( \lambda_{\text{max}} \) (in 0.1 N NaOH) = 255, 285 and 345 nm
pK\text{a} values = 3.3, 7.4 and 9.3 at 25°C

STORAGE / STABILITY AS SUPPLIED:
If stored frozen, chlortetracycline hydrochloride is expected to remain stable at least four years.
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 \(\mu\)m

Mobile Phases:
- A: 0.1% H\(_3\)PO\(_4\) in water 85%
- B: 0.1% H\(_3\)PO\(_4\) in acetonitrile 15%

Pressure: 2200 psi Flow Rate: 1.5 mL/min
Solvent: Mobile phase A, 1 mg/mL Volume Injected: 10 \(\mu\)L
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).
5. Sigma quality control data.

Sigma warrants that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see reverse side of the invoice or packing slip.