

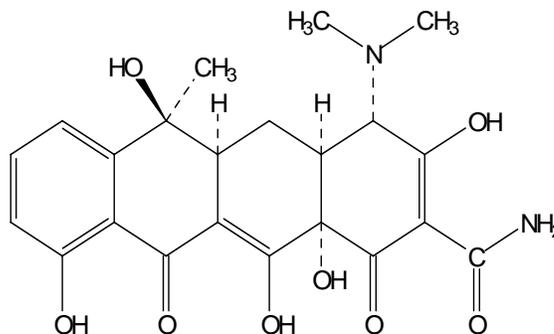
## Product Information

### TETRACYCLINE

Product Number **T 3258**

CAS NUMBER: 60-54-8

SYNONYMS: Abramycin; Abricycline; Agromicina; Ambramicina; Ambramycin; Amycin; Biotetra; Bristacilin Alpha; Cefracycline Suspension; Criseociclina; Democracin; Deschlorobiomycin; Hostacyclin; Liquamycin; 6-methyl-1, 11-dioxy-2-naphthacencarboxamide; Neocycline; Oletetrin; Omegamycin; Orlycyclyne; Panmycin; Polycycline; Purocyclina; Robitet; Sanclomycine; Sigmamycin; Steclin; Tetrabon; Tetracycline; Tetracycline I; Tetracycline II; SK-Tetracycline, Tetracyn, Tetradecin, Tetraverine, Tsiklomitsin, T-125, Veracin, Vetacyclinum



#### Product Description

Molecular formula: C<sub>22</sub>H<sub>24</sub>N<sub>2</sub>O<sub>8</sub>

Formula weight: 444.4 (anhydrous)

pK<sub>a</sub>: 8.3, 10.2 (50% aqueous DMF)<sup>1</sup>

λ<sub>max</sub>: 220, 268, 355 nm (E<sup>mm</sup> = 13, 18.04, 13.32) for free base in 0.1 M HCl<sup>1</sup>

Specific Rotation: -257.9° (0.1 M HCl at 25 °C)<sup>1</sup>

-239° (methanol at 25 °C)<sup>1</sup>

Tetracyclines possess a wide range of antimicrobial activity against gram-positive and gram-negative bacteria. The bacterial ribosome is the site of action of tetracyclines. Access to the ribosomes of gram-negative bacteria is obtained by passive diffusion through hydrophilic pores in the outer cell membrane and then by an energy-dependent active transport system that pumps all tetracyclines through the inner cytoplasmic membrane. This active transport system may require a periplasmic protein carrier. Tetracyclines bind specifically to 30S ribosomes and appear to inhibit protein synthesis by preventing access of aminoacyl tRNA to the acceptor site on the mRNA-ribosome complex. The inhibitory effects of the tetracyclines can be reversed by washing. This suggests that the reversibly bound antibiotic rather than the small portion of irreversibly bound drug is responsible for the antibacterial action.<sup>3</sup>

#### Preparation Instructions

Tetracycline as a free base is soluble 1 in 2500 of water and 1 in 50 of alcohol; soluble in methanol, but sparingly soluble in acetone; freely soluble in dilute acids and, with decomposition, in solutions of alkali hydroxides, but practically insoluble in chloroform and ether.<sup>2</sup>

The product is soluble in 1 M HCl with heating (50 mg/mL), yielding a clear to slightly hazy yellow to orange-brown solution. Tetracycline undergoes reversible epimerizations in solution to the less active 4-epitetracycline; the degree of epimerization is dependent on pH and is greatest at a pH of approximately 3.

Epimerization has been observed to be the dominant degradation reaction at pH 2.5 to 5. Formation of anhydrotetracycline occurs at a very low pH and oxidation to isotetracycline occurs at alkaline pH. Tetracycline's potency is reduced in solutions with a pH below 2. The pH of a 1% suspension in water may range from 3.0 to 7.0.<sup>2</sup>

#### Storage/Stability

This product should be stored in the freezer. The product will darken in moist air when exposed to strong sunlight.<sup>2</sup>

**References**

1. The Merck Index, 12<sup>th</sup> ed., #9337 (1996).
2. Martindale The Extra Pharmacopoeia, 30<sup>th</sup> ed., 212-213 (1993).
3. Goodman and Gilman's The Pharmacological Basis of Therapeutics, 7<sup>th</sup> ed., 1170-1171 (1985).

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