



Product Information

Oxytetracycline dihydrate SigmaUltra

Product Number **O 4636**
Store at Room Temperature

Product Description

Molecular Formula: $C_{22}H_{24}N_2O_9 \cdot 2H_2O$
Molecular Weight: 496.5
CAS Number: 6153-64-6
Melting Point: 181-182 °C (with decomposition)¹
Specific Rotation (25 °C): -196.6° (0.1 N HCl),
-2.1 (0.1 N NaOH), +26.5 (methanol)¹
Synonyms: [4S-(4 α ,4 α ,5 α 5 α ,6 β ,12 α)]-
4-(dimethylamino)-1,4,4a,5,5a,6,11,12a-octahydro-
3.5.6.10.12.12a-hexahydroxy-6-methyl-1,11-dioxo-
2-naphthacene-carboxamide dihydrate¹

Trace elemental analyses have been performed on the SigmaUltra oxytetracycline dihydrate. The Certificate of Analysis provides lot-specific results. SigmaUltra oxytetracycline dihydrate is for applications which require tight control of elemental content.

Oxytetracycline is an antibiotic and a tetracycline derivative that occurs naturally in *Streptomyces rimosus* and *Streptomyces xanthophaeus*. Its mode of action is similar to that of tetracycline. Tetracyclines generally act by binding to the 30S subunit of the ribosome, which prevents similar binding by aminoacyl transfer RNA and subsequent protein synthesis.^{1,2} Oxytetracycline (10-40 μ g/ml) has been used to probe the differentiation clock and protein synthesis in *Theileria annulata*.³

The effect of the immobilization of *Streptomyces rimosus* in calcium alginate medium on oxytetracycline production has been studied.⁴ A combination biosensor-FACS technique has been published for the qualitative detection of oxytetracycline production by *Streptomyces rimosus* in soil environments.⁵

An HPLC-diode array method for the analysis of oxytetracycline and other tetracyclines in bovine milk and muscle has been described.⁶ An HPLC-MS method for the detection of oxytetracycline in calf tissues has been published.⁷ An LC-MS-MS study has investigated the degradation products of oxytetracycline in soil interstitial water.⁸

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

This product is soluble in 1 M HCl (50 mg/ml), yielding a very slightly hazy, yellow to yellow-orange solution.

References

1. The Merck Index, 12th ed., Entry# 7111.
2. Martindale The Extra Pharmacopoeia, 31st ed., Reynolds, J. E. F., ed., Royal Pharmaceutical Society (London, UK: 1996), pp. 259-260, 287.
3. Shiels, B., et al., Modulation of protein synthesis relative to DNA synthesis alters the timing of differentiation in the protozoan parasite *Theileria annulata*. *J. Cell Sci.*, **110(Pt 13)**, 1441-1451 (1997).
4. Yang, S. S., and Yueh, C. Y., Oxytetracycline production by immobilized *Streptomyces rimosus*. *J. Microbiol. Immunol. Infect.*, **34(4)**, 235-242 (2001).
5. Hansen, L. H., et al., Detection of oxytetracycline production by *Streptomyces rimosus* in soil microcosms by combining whole-cell biosensors and flow cytometry. *Appl. Environ. Microbiol.*, **67(1)**, 239-244 (2001).

6. Cinquina, A. L., et al., Validation of a high-performance liquid chromatography method for the determination of oxytetracycline, tetracycline, chlortetracycline and doxycycline in bovine milk and muscle. *J. Chromatogr. A*, **987(1-2)**, 227-233 (2003).
7. Cherlet, M., et al., Quantitative analysis of oxytetracycline and its 4-epimer in calf tissues by high-performance liquid chromatography combined with positive electrospray ionization mass spectrometry. *Analyst*, **128(7)**, 871-878 (2003).
8. Halling-Sorensen, B., et al., Characterisation of the abiotic degradation pathways of oxytetracyclines in soil interstitial water using LC-MS-MS. *Chemosphere*, **50(10)**, 1331-1342 (2003).

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