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ProductInformation

Ascomycin
from *Streptomyces hygroscopicus var. ascomyceticus*

Product Number **A 3835**
Storage Temperature -0 °C

Product Description

Molecular Formula: $C_{43}H_{69}NO_{12}$
Molecular Weight: 792.0
CAS Number: 104987-12-4
Synonym: FK-520

Ascomycin, or FK-520, is a macrolide and macrolactone compound which has been isolated from the soil bacterium *Streptomyces hygroscopicus var. ascomyceticus*. Ascomycin is a C21 ethyl analog of the macrolide tacrolimus, or FK-506.[1,2,3] Ascomycin has been shown to inhibit the peptidyl-prolyl cis-trans isomerase activity of FK-506-binding proteins of T cells.[2] The methyltransferase and hydroxylase genes involved in the biosynthesis of FK-520 have been characterized.[4]

Ascomycin has been shown to inhibit Ca^{2+} uptake in various cultured cells, including SH-SY5Y human neuroblastoma cells, DT40 chicken B lymphocytes, and differentiated and undifferentiated BC3H1 skeletal muscle cells.[5] The modulation of Ca^{2+} currents in rat thalamocortical relay neurons in the presence of ascomycin has been investigated.[6] The dissociation of the FK-506 binding protein (FKBP12)-type 1 ryanodine receptor (RyR1) complex by ascomycin has been probed.[7]

The use of centrifugal counter-current chromatography for the separation of ascomycin and FK-506 has been described.[8] A study of non-covalent complexes of FK-520 with rat and bovine albumin by pneumatically assisted ESI-MS has been reported.[9]

Precautions and Disclaimer

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

Preparation Instructions

This product is soluble in methanol (10 mg/ml), yielding a clear, colorless to very faint yellow solution.

References

1. The Merck Index, 12th ed., Entry# 9200.
2. Pahl, A., and Keller, U., FK-506-binding proteins from streptomycetes producing immunosuppressive macrolactones of the FK-506 type. J. Bacteriol., **174(18)**, 5888-5894 (1992).
3. Arndt, C., et al., Secretion of FK506/FK520 and rapamycin by *Streptomyces* inhibits the growth of competing *Saccharomyces cerevisiae* and *Cryptococcus neoformans*. Microbiology, **145(Pt 8)**, 1989-2000 (1999).
4. Motamedi, H., et al., Characterization of methyltransferase and hydroxylase genes involved in the biosynthesis of the immunosuppressants FK506 and FK520. J. Bacteriol., **178(17)**, 5243-5248 (1996).
5. Bultynck, G., et al., Effects of the immunosuppressant FK506 on intracellular Ca^{2+} release and Ca^{2+} accumulation mechanisms. J Physiol., **525 Pt 3**, 681-693 (2000).
6. Meuth, S., et al., Modulation of Ca^{2+} currents in rat thalamocortical relay neurons by activity and phosphorylation. Eur. J. Neurosci., **15(10)**, 1603-1614 (2002).
7. Mackrill, J. J., et al., Analysis of type 1 ryanodine receptor-12 kDa FK506-binding protein interaction. Biochem. Biophys. Res. Commun., **285(1)**, 52-57 (2001).

8. Wang-Fan, W., et al., Application of centrifugal counter-current chromatography to the separation of macrolide antibiotic analogues. I. Selection of solvent systems based on solubility and partition coefficient investigations. J. Chromatogr. A, **864(1)**, 69-76 (1999).

9. Bakhtiar, R., and Stearns, R. A., Studies on non-covalent associations of immunosuppressive drugs with serum albumin using pneumatically assisted electrospray ionization mass spectrometry. Rapid Commun. Mass Spectrom., **9(3)**, 240-244 (1995).

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