

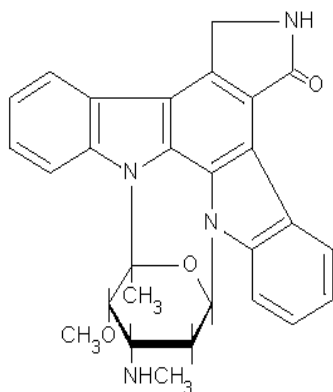
Product Information

Staurosporine from *Streptomyces* sp.
for molecular biology

Catalog Number **S5921**
Storage Temperature 2-8 °C

CAS RN: 62996-74-1

Synonym: Antibiotic AM-2282



Molecular formula: C₂₈H₂₆N₄O₃
Formula weight: 466.53

Melting Point: decomposes at 288-291 °C¹
 λ_{max} : 243, 292, 335, 356, 372 nm
 $E_{1\%}^1\text{cm}$ = 481, 1119, 241, 144, 171 in methanol²
 $[\alpha]^{25}$: +35.0° (c = 1% in methanol)³

Product Description

Staurosporine is a potent inhibitor of phospholipid/Ca²⁺ dependent protein kinase (Protein Kinase C; PKC)⁴ and platelet aggregation.² It is widely employed as an inducer of apoptosis in many mammalian cell types^{5,6} and is often used to study the involvement of protein kinases in signal transduction pathways⁷.

When Jurkat cells are stimulated by phorbol 12-myristate 13-acetate (PMA) and a co-stimulator such as phytohemagglutinin (PHA), IL-2 production is

strongly enhanced⁸. Staurosporine inhibits PKC activity even at low concentrations. This inhibition interferes with T-lymphocyte activation⁴, even in the presence of PMA and PHA, and IL-2 biosynthesis is also inhibited. The product is tested for its ability to inhibit IL-2 production by T-cells.

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation instructions

This product is soluble in DMSO, DMF; slightly soluble in methanol, ethyl acetate and chloroform; insoluble in water. Sigma has dissolved this product in methanol at 2 mg/mL and observed a clear, colorless to yellow solution. Limited testing has also shown this product to be soluble in acetonitrile to at least 1 mg/mL and in DMSO to at least 5 mg/mL.

Storage/stability

Store protected from light at 2-8 °C. Under these conditions the product is stable for at least 2 years. All stock solutions should be stored at -20 °C. Sigma found that 1 mg/ml and 0.2 mg/ml solutions in DMSO were stable at -20 °C for at least 6 months. Solutions of the same concentrations stored at 2-8 °C showed slightly lower stability.

Product Profile

In the presence of 1 µg/ml PHA and 10 ng/ml PMA plus 8 ng/ml staurosporine, production of IL-2 was inhibited at least 90% compared to control cells with only PHA and PMA.

Suitability Assay

2.5 ml fresh culture medium was added to 25 cm² culture bottles. 2.5 ml of Jurkat cell culture (1 x 10⁶ cells/ml) was added to each culture bottle. The following additions were made to duplicate bottles.

- a. Control - no additions
- b. 1 µg/ml PHA + 10 ng/ml PMA
Add 10 µL PHA stock solution (0.5 mg/ml PHA in filter sterilized PBS) and 5 µL PMA stock solution (10 µg/ml PMA in DMSO)
- c. 8 ng/ml Staurosporine + 1 µg/ml PHA + 10 ng/ml PMA
Add 10 µL PHA stock solution, 5 µL PMA stock solution and 2 µL staurosporine stock solution (20 µg/ml in absolute ethanol)

After mixing well the bottles were incubated at 37 °C for 24 hours. After centrifugation the clarified broth was then tested for IL-2 production by ELISA assay. IL-2 production in the test cultures containing 8 ng/ml staurosporine was inhibited at least 90% compared to test cultures containing only PHA and PMA.

References

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