Staurosporine
Catalog #6212, 1 mg

FOR RESEARCH USE ONLY.
Not for use in diagnostic procedures.

INTRODUCTION

Staurosporine is a natural product derived alkaloid which is isolated from Streptomyces staurospores cultures. This protein kinase inhibitor belongs to a family of kinase inhibitors containing an indole carbozol chromophore[1]. Staurosporine is a potent inhibitor of a number of kinases including: protein kinase C (PKC), cAMP dependent protein kinase, protein kinase A (PKA), tyrosine protein kinase, phosphorylase kinase, and Ca^{2+}/calmodulan-dependent protein kinase[1-6]. The ATP binding site on these kinase enzymes appears to be targeted by these Streptomyces derived inhibitors[1]. Experiments using [3H]- staurosporine inhibition of purified PKC, PKA, tyrosine protein kinase, and Ca^{2+}/calmodulan-dependent protein kinase enzymes revealed dissociation constants (KD) ranging from 2-10 nM[2,4]. Human promyelocytic leukemia (HL-60) cells were found to be sensitive to apoptosis induction from a 2 hour exposure to staurosporine concentrations as low as 0.1 µM[7].

Inhibition of these intracellular kinases by staurosporine leads to the induction of apoptosis as exhibited by the classic chromatin condensation leading to the formation of micronuclear bodies and reduced cell volumes. DNA is subsequently cleaved into oligonucleosomal fragments (laddering) as evidenced by agarose gel analysis[7,8]. Staurosporine was determined to be an effective apoptosis-inducing agent in virtually all cell lines that were exposed to this kinase inhibiting agent[7,8].

SPECIFICATIONS

- Formula: $C_{28}H_{26}N_4O_3$
- Formula Weight: 466.5
- CAS#: 62996-74-1
- Purity: ≥ 98%

STORAGE

- Store at -20°C
- Avoid freeze/thaw cycles

SOLUBILITY

- DMSO (50 mM)
- Ethanol (2 mg/mL)
- Methanol (2 mg/mL)
- Insoluble in water

SAFETY

- **DANGER!** May cause genetic defects. May cause cancer.
- See Safety Data Sheet (SDS)
- SDS available at www.immunochemistry.com and by calling ICT at 952-888-8788 and 800-829-3194.
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HOW TO USE

1. Dissolve staurosporine powder in tissue culture grade DMSO to obtain a 1 mM staurosporine stock concentration.

   Example Calculation:
   Staurosporine Formula Weight = 466.5
   1 mM Staurosporine = 1 x 466.5 µg/mL = 0.4665 mg/mL
   To reconstitute a 1 mg vial of Staurosporine in DMSO:
   1 mg/0.4665 mg/mL = 2.14 mL DMSO

2. Prepare 50-100 uL aliquots of the DMSO solublilized staurosporine and store frozen at -20°C. A frozen vial of staurosporine may be thawed twice before discarding.

3. Spike cell cultures at a staurosporine concentration of 1 µM in cell culture media. This equates to a 1 µL spike of the 1 mM staurosporine stock per mL of the cell culture suspension. This concentration works well for inducing many cell lines, including HL-60 and Jurkat cells when using a 4-5 hour incubation period at 37°C. Typical cell suspension concentrations that have been used for this staurosporine induction protocol range from 1 x 10^5-1 x 10^6 cells/mL.

4. Perform time course studies on your particular cell line to determine the optimal staurosporine concentration and exposure time required to achieve good apoptosis induction levels.

5. Proceed with your experimental apoptosis induction model system.

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