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ProductInformation

Cyclosporin A
from *Tolypocladium inflatum*

Product Number **C 3662**
Storage Temperature 2-8 °C

CAS RN: 59865-13-3

Synonyms: Cyclosporine; Antibiotic S 7481F1; Ciclosporin; CsA

Molecular formula: $C_{62}H_{111}N_{11}O_{12}$
Molecular weight: 1202.61

Melting point: 148-151°C [1]
$[\alpha]^{20}_{D}$: –244° (c = 0.6 in chloroform)[1]

Product Description
Cyclosporin A (CsA) is a non-polar cyclic oligopeptide metabolite from the fungus *Tolypocladium inflatum*. It has too narrow a spectrum of antifungal activity to be very useful as an antibiotic, but it possesses potent immunosuppressive properties, affecting primarily T-lymphocytes[2]. It has been shown to inhibit the functioning of several nuclear proteins involved in T-cell activation at the level of mRNA transcription.[3] Cyclosporin is the primary tool used to prevent rejection following solid organ and bone marrow transplantation. It forms a complex with its intracellular receptor cyclophilin, which can then bind to calcineurin, inhibiting its enzymatic activity.,[4,5,6] CsA was found to suppress the replication of hepatitis C virus genome in cultured hepatocytes[7]

In a study of its specific disruption of renal function (noting its hepatotoxicity) and of gene transcription, CsA was administered to rats intramuscularly at a dose of 7.5 mg/kg using a mixture of 100 mg CsA per mL in 90% olive oil, 10% ethanol.[8] In another study, CsA at concentrations >10 nM protected isolated hepatocytes against the action of phalloidin.[9] Measuring the concentration of CsA in solution by HPLC was shown to be significantly temperature-dependent, due to interconversion of CsA between two forms.[10] An extensive list of references has been reported , including a comprehensive review of analytical properties.[11]

Sigma also offers C 1832, Cyclosporin A, which has received additional testing for molecular biology applications. In Jurkat cells (a leukemic T-cell line), the production of interleukin-2 was inhibited by 90% in the presence of 1 µg/ml C 1832.[12]

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
Sigma assays involve only organic solvents: 10 mg/mL in methylene chloride, 6 mg/mL in chloroform, 10 mg/mL in ethanol, 50 mg/mL in DMSO. Solutions are clear, colorless to faint yellow.[12] Cyclosporin is reported to be "slightly soluble in water and saturated hydrocarbons."[1]

Stock solutions in ethanol or DMSO should be stored at –20 °C. Cyclosporin is stable in solution if protected from light, but its concentration may drop due to adsorption to the container walls.

[The concentration of] "Cyclosporin was stable over 72 hours following dilution in glucose 5% or glucose/amino-acid solutions and storage at room temperature in the dark; similar stability was seen following dilution in lipid emulsion, but dilutions in sodium chloride 0.9% were considered to be stable only for 8 hours." In this study, the solution was "stable if the initial cyclosporine concentration remained at 90% or above."[13,14]

Storage/Stability
Store the product dessicated and protected from light at 2-8 °C. Under these conditions the product is stable for 2 years. It should be re-evaluated for suitability in user's application every two years.

References

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