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
[α]_{20}^{D} : −244° (c = 0.6 in chloroform)

**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. It has been shown to inhibit the functioning of several nuclear proteins involved in T-cell activation at the level of mRNA transcription.

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. CsA was found to suppress the replication of hepatitis C virus genome in cultured hepatocytes.

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. In another study, CsA at concentrations >10 nM protected isolated hepatocytes against the action of phalloidin. Measuring the concentration of CsA in solution by HPLC was shown to be significantly temperature-dependent, due to interconversion of CsA between two forms. An extensive list of references has been reported, including a comprehensive review of analytical properties.

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.

**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. Cyclosporin is reported to be "slightly soluble in water and saturated hydrocarbons."

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."

**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
12. Sigma quality control data.