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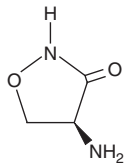
PRODUCT INFORMATION

L-Cycloserine

Item No. 17780

CAS Registry No.:	339-72-0
Formal Name:	4S-amino-3-isoxazolidinone
Synonyms:	(-)-Cycloserine, (S)-Cycloserine, L-4-amino 3-Isoxazolidinone, Levcycloserine
MF:	$C_3H_6N_2O_2$
FW:	102.1
Purity:	≥95%
UV/Vis.:	λ_{max}: 228 nm
Supplied as:	A crystalline solid
Storage:	-20°C
Stability:	≥2 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

L-Cycloserine is supplied as a crystalline solid. A stock solution may be made by dissolving the L-cycloserine in the solvent of choice. L-Cycloserine is soluble in the organic solvent DMSO, which should be purged with an inert gas, at a concentration of approximately 1 mg/ml.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of L-cycloserine can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of L-cycloserine in PBS, pH 7.2, is approximately 10 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

L-Cycloserine is a potent inhibitor of serine palmitoyl transferase (SPT), the first enzyme in the sphingolipid synthesis pathway.[1] It inhibits bacterial SPT activity by 80% at a concentration of 25 µM, which is 100 times more potent than D-cycloserine (Item No. 22194). L-Cycloserine inhibits SPT activity up to 86% in a dose-dependent manner in microsomes prepared from mouse brain following administration of doses ranging from 25-200 mg/kg. It also inhibits SPT in rabbit aorta and several aminotransferases *in vitro* and *in vivo* in rat.[2,3] L-Cycloserine inhibits the growth of *M. tuberculosis* through branched chain aminotransferase inactivation, and it does so more rapidly and potently than D-cycloserine (MICs = 0.3 and 2.3 µg/ml, respectively).[4]

References

1. Sundaram, K.S. and Lev, M. Inhibition of sphingolipid synthesis by cycloserine *in vitro* and *in vivo*. *J. Neurochem.* **42(2)**, 577-581 (1984).
2. Williams, R.D., Sgoutas, D.S., Zaatari, G.S., *et al.* Inhibition of serine palmitoyltransferase activity in rabbit aorta by L-cycloserine. *J. Lipid Res.* **28(12)**, 1478-1481 (1987).
3. Wong, D.T., Fuller, R.W., and Molloy, B.B. Inhibition of amino acid transaminases by L-cycloserine. *Adv. Enzyme Regul.* **11**, 139-154 (1973).
4. Amorim Franco, T.M., Favrot, L., Vergnolle, O., *et al.* Mechanism-based inhibition of the *Mycobacterium tuberculosis* branched-chain aminotransferase by D- and L-cycloserine. *ACS Chem Biol.* **12(5)**, 1235-1244 (2017).

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