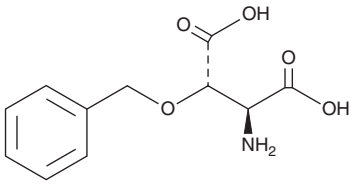
PRODUCT INFORMATION

DL-TBOA

Item No. 29632

CAS Registry No.: 205309-81-5
Formal Name: *rel*-3R-(phenylmethoxy)-D-aspartic acid
Synonym: DL-*threo*-β-Benzyloxyaspartate
MF: $C_{11}H_{13}NO_5$
FW: 239.2
Purity: ≥98%
Supplied as: A solid
Storage: -20°C
Stability: ≥4 years



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

Laboratory Procedures

DL-TBOA is supplied as a solid. A stock solution may be made by dissolving the DL-TBOA in the solvent of choice, which should be purged with an inert gas. DL-TBOA is soluble in the organic solvent DMSO. It is also soluble in water. The solubility of DL-TBOA in DMSO and water is approximately 100 and 5 mM (warmed), respectively. We do not recommend storing the aqueous solution for more than one day.

Description

DL-TBOA is an inhibitor of excitatory amino acid transporters (EAATs), with IC_{50} values of 67 and 5.5 µM for glutamate uptake in COS-1 cells expressing human EAAT1 and EAAT2, respectively.[1] It inhibits inward currents induced by L-aspartate in EAAT4-expressing *Xenopus* oocytes (K_i = 4.4 µM) and by L-glutamate in EAAT5-expressing oocytes (K_i = 3.2 µM) voltage-clamped at -60 mV.[2] *In vivo*, DL-TBOA (500 µM, intrahippocampal perfusion) increases extracellular aspartate, glutamate, and alanine levels in rat hippocampus.[3] Intrahippocampal injection of DL-TBOA increases lesion volume in the rat CA1 region in a dose-dependent manner and induces hyperexcitability, wet-dog shakes, salivation, forelimb myoclonus, limbic seizures, and epileptic EEG discharges at a dose of 25 nmol. DL-TBOA (5 and 10 µg, intrathecal) induces antinociception in the second phase of the formalin test in rats when administered 10 minutes prior to formalin.[4]

References

1. Shimamoto, K., Lebrun, B., Yasuda-Kamatani, Y., *et al.* DL-*threo*-β-benzyloxyaspartate, a potent blocker of excitatory amino acid transporters. *Mol. Pharmacol.* **53(2),** 195-201 (1998).
2. Shigeri, Y., Shimamoto, K., Yasuda-Kamatani, Y., *et al.* Effects of *threo*-β-hydroxyaspartate derivatives on excitatory amino acid transporters (EAAT4 and EAAT5). *J. Neurochem.* **79(2),** 297-302 (2001).
3. Montiel, T., Camacho, A., Estrada-Sánchez, A.M., *et al.* Differential effects of the substrate inhibitor L-*trans*-pyrrolidine-2,4-dicarboxylate (PDC) and the non-substrate inhibitor DL-*threo*-β-benzyloxyaspartate (DL-TBOA) of glutamate transporters on neuronal damage and extracellular amino acid levels in rat brain *in vivo*. *Neuroscience* **133(3),** 667-678 (2005).
4. Yaster, M., Guan, X., Petralia, R.S., *et al.* Effect of inhibition of spinal cord glutamate transporters on inflammatory pain induced by formalin and complete Freund's adjuvant. *Anesthesiology* **114(2),** 412-423 (2011).

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