



# SZABO SCANDIC

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## Produktinformation



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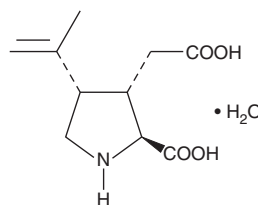
# PRODUCT INFORMATION



## (-)-(α)-Kainic Acid (hydrate)

Item No. 78050

**CAS Registry No.:** 58002-62-3  
**Formal Name:** 2S-carboxy-4S-(1-methylethenyl)-3S-pyrrolidineacetic acid, monohydrate  
**MF:** C<sub>10</sub>H<sub>15</sub>NO<sub>4</sub> • H<sub>2</sub>O  
**FW:** 231.2  
**Purity:** ≥98%  
**Supplied as:** A crystalline solid  
**Storage:** Room temperature  
**Stability:** ≥2 years



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

### Laboratory Procedures

(-)-(α)-Kainic acid (hydrate) is supplied as a crystalline solid. Aqueous solutions of (-)-(α)-kainic acid (hydrate) can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of (-)-(α)-kainic acid (hydrate) in PBS, pH 7.2, is approximately 50 mg/ml. We do not recommend storing the aqueous solution for more than one day.

### Description

(-)-(α)-Kainic acid is a cyclic analog of L-glutamate originally isolated from *D. simplex* that has neuroexcitatory activities.<sup>1</sup> It binds to the homomeric kainate receptors GluK1, GluK2, GluK3, GluK4, and GluK5 (K<sub>d</sub>s = 75.9, 12.7, 32.8, 4.7, and 15 nM, respectively).<sup>2</sup> (-)-(α)-Kainic acid (5 mM) induces calcium influx and membrane depolarization, as well as glutamate release, in rat brain synaptosomes.<sup>3</sup> It induces chromatin condensation and nuclear membrane fragmentation, markers of apoptosis, in primary neonatal cerebellar granule neurons when used at a concentration of 100 μM.<sup>4</sup> Intracerebroventricular administration of (-)-(α)-kainic acid induces convulsive behavior in rats (ED<sub>50</sub> = 0.51 nmol/animal) and induces seizures in mice with a 50% convulsive dose (CD<sub>50</sub>) value of 0.39 nmol/animal.<sup>5</sup> It has been commonly used to induce seizures in rodents.<sup>6,7</sup>

### References

1. Reddy, N.K. and Chandrasekhar, S. Total synthesis of (-)-α-kainic acid via chirality transfer through Ireland-Claisen rearrangement. *J. Org. Chem.* **78(7)**, 3355-3360 (2013).
2. Sagot, E., Pickering, D.S., Pu, X., *et al.* Chemo-enzymatic synthesis of a series of 2,4-syn-functionalized (S)-glutamate analogues: New insight into the structure - activity relation of ionotropic glutamate receptor subtypes 5, 6, and 7. *J. Med. Chem.* **51(14)**, 4093-4103 (2008).
3. Pastuszko, A., Wilson, D.F., and Erecińska, M. Effects of kainic acid in rat brain synaptosomes: The involvement of calcium. *J. Neurochem.* **43(3)**, 747-754 (1984).
4. Simonian, N.A., Getz, R.L., Leveque, J.C., *et al.* Kainic acid induces apoptosis in neurons. *Neuroscience* **75(4)**, 1047-1055 (1996).
5. Chiamulera, C., Costa, S., Valerio, E., *et al.* Domoic acid toxicity in rats and mice after intracerebroventricular administration: Comparison with excitatory amino acid agonists. *Pharmacol. Toxicol.* **70(2)**, 115-120 (1992).
6. Wang, Q., Yu, S., Simonyi, A., *et al.* Kainic acid-mediated excitotoxicity as a model for neurodegeneration. *Mol. Neurobiol.* **31(1-3)**, 3-16 (2005).
7. Domin, H., Zieba, B., Golembiowska, K., *et al.* Neuroprotective potential of mGluR5 antagonist MTEP: effects on kainate-induced excitotoxicity in the rat hippocampus. *Pharmacol. Rep.* **62(6)**, 1051-1061 (2010).

#### WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

#### SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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