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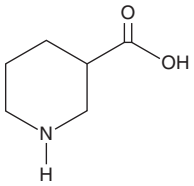
PRODUCT INFORMATION

Nipecotic Acid

Item No. 36126

CAS Registry No.: 498-95-3
Formal Name: 3-piperidinecarboxylic acid
Synonyms: (±)-Nipecotic Acid, (R,S)-Nipecotic Acid, 3-Piperidine Carboxylic Acid, DL-Piperidine 3-Carboxylic Acid
MF: $C_6H_{11}NO_2$
FW: 129.2
Purity: ≥95%
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

Nipecotic acid is supplied as a solid. A stock solution may be made by dissolving the nipecotic acid in the solvent of choice, which should be purged with an inert gas. Nipecotic acid is slightly soluble in ethanol, DMSO, and dimethyl formamide.

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 nipecotic acid can be prepared by directly dissolving the solid in aqueous buffers. The solubility of nipecotic acid in PBS (pH 7.2) is approximately 10 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

Nipecotic acid is an inhibitor of GABA transporters (GAT; IC_{50}s = 2.6, 310, 29, and 16 µM for mouse GAT-1, GAT-2, GAT-3, and GAT-4, respectively).[1] It does not bind $GABA_A$ or $GABA_B$ receptors (IC_{50}s = >100 µM for both) but does bind the adenosine A_3 receptor (IC_{50} = 0.01 µM).[2,3] Nipecotic acid inhibits GABA uptake in isolated rabbit choroid plexus (IC_{50} = 244 µM).[4] It inhibits lactate dehydrogenase (LDH) release (EC_{50} = ~5 µM) and aggregation of a mutant form of huntingtin, htt-N63-148Q, in PC12 cells.[5] Intraventricular administration of nipecotic acid (300 µg/animal) decreases tail flick reaction time in a rat model of morphine-induced analgesia.[6]

References

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3. Minetti, P., Tinti, M.O., Carminati, P., *et al.* 2-*n*-Butyl-9-methyl-8-[1,2,3]triazol-2-yl-*9H*-purin-6-ylamine and analogues as A_{2A} adenosine receptor antagonists. Design, synthesis, and pharmacological characterization. *J. Med. Chem.* **48(22)**, 6887-6896 (2005).
4. Ramanathan, V.K., Brett, C.M., and Giacomini, K.M. Na^+-dependent γ-aminobutyric acid (GABA) transport in the choroid plexus of rabbit. *Biochim. Biophys. Acta* **1330(1)**, 94-102 (1997).
5. Wang, W., Duan, W., Igarashi, S., *et al.* Compounds blocking mutant huntingtin toxicity identified using a Huntington's disease neuronal cell model. *Neurobiol. Dis.* **20(2)**, 500-508 (2005).
6. Mantegazza, P., Tammiso, R., Vicentini, L., *et al.* Nipecotic acid and guvacine antagonism on morphine analgesia in rats. *Pharmacol. Res. Commun.* **11(8)**, 657-662 (1979).

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