Nefiracetam

Cat. No.: HY-B0340

CAS No.: 77191-36-7

Molecular Formula: $C_{14}H_{18}N_2O_2$

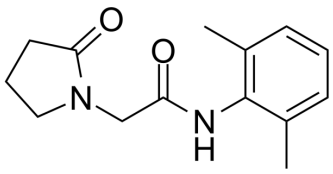
Molecular Weight: 246.3

Target: GABA Receptor

Pathway: Membrane Transporter/Ion Channel; Neuronal Signaling

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	2 years
	-20°C	1 year



SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 100 mg/mL (406.01 mM)

H_2O : ≥ 25 mg/mL (101.50 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	4.0601 mL	20.3004 mL	40.6009 mL
5 mM	0.8120 mL	4.0601 mL	8.1202 mL
10 mM	0.4060 mL	2.0300 mL	4.0601 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (10.15 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (10.15 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (10.15 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Nefiracetam is a GABAergic, cholinergic, and monoaminergic neuronal systems enhancer for Ro 5-4864-induced convulsions.Target: GABA ReceptorNefiracetam induces a short-term depression of ACh-evoked currents at submicromolar concentrations (0.01-0.1 μM) and a long-term enhancement of the currents at micromolar concentrations (1-10 μM). Nefiracetam interacts with PKA and PKC pathways, which may explain a cellular mechanism for the action of cognition-enhancing agents. Lower (submicromolar) concentrations of the nootropic Nefiracetam reduces ACh-evoked currents to

30% (0.01 μM) and 38% (0.1 μM) of control after a 10-minute treatment [1].Nefiracetam administered orally inhibits Ro 5-4864-induced convulsions in EL mice. Nefiracetam also efficiently inhibits Ro 5-4864-induced convulsions in DDY mice at doses higher than 10 mg/kg [2]. Nefiracetam administered daily 1 hour before each training session facilitates the acquisition process of the avoidance response [3].

REFERENCES

[1]. Nishizaki, T., et al., Nefiracetam modulates acetylcholine receptor currents via two different signal transduction pathways. Mol Pharmacol, 1998. 53(1): p. 1-5.

[2]. Shiotani, T., et al., Anticonvulsant actions of nefiracetam on epileptic EL mice and their relation to peripheral-type benzodiazepine receptors. Brain Res, 2000. 859(2): p. 255-61.

[3]. Sakurai, T., et al., Effects of N-(2,6-dimethylphenyl)-2-(2-oxo-1-pyrrolidinyl)acetamide (DM-9384) on learning and memory in rats. Jpn J Pharmacol, 1989. 50(1): p. 47-53.

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