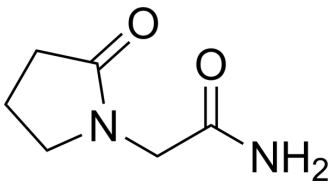
Piracetam

Cat. No.:	HY-B0585
CAS No.:	7491-74-9
Molecular Formula:	$C_6H_{10}N_2O_2$
Molecular Weight:	142.16
Target:	iGluR
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 (703.43 mM)
H_2O : ≥ 50 mg/mL (351.72 mM)
* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	7.0343 mL	35.1716 mL	70.3433 mL
	5 mM	1.4069 mL	7.0343 mL	14.0687 mL
	10 mM	0.7034 mL	3.5172 mL	7.0343 mL

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

In Vivo

1. Add each solvent one by one: PBS
   Solubility: 100 mg/mL (703.43 mM); Clear solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (17.59 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 2.5 mg/mL (17.59 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Piracetam (UCB-6215) is a cyclic derivative of the neurotransmitter gamma-aminobutyric acid (GABA), used in treatment of a wide range of cognitive disorders.

In Vitro

Piracetam (UCB-6215) is able to significantly decrease the fusogenic and destabilising effect of Abeta 29-42, in a concentration-dependent manner. Preincubation of piracetam, at a piracetam/peptide ratio of 960, during 20 min before

	the addition of Abeta 29-42 prevents almost completely the mixture of the two fluorescent probes. Preincubation of piracetam with lipids prevents almost completely the release of calcein induced by the peptide in a dose-dependent fashion (piracetam/peptide ratios from 9.6 to 960)[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	Piracetam (UCB-6215) (< 1.0 mM) preincubated with brain membranes enhances membrane fluidity in aged mice, rats and humans, as indicated by decreased anisotropy of the membrane-bound fluorescence probe 1,6-diphenyl-1,3,5-hexatriene (DPH). Piracetam (UCB-6215) (300 mg/kg once daily) significantly increases membrane fluidity in some brain regions of young and aged rats, but has no measurable effect on membrane fluidity in the young rats[2]. Piracetam (UCB-6215) (300 mg/kg daily for 6 weeks) improves active avoidance learning in the aged rats only and elevates membrane fluidity in all brain regions except the cerebellum in the aged rats. Piracetam (UCB-6215) (300 mg/kg daily for 6 weeks) also improves NMDA receptor density in the hippocampus and on muscarinic cholinergic receptor densities in the frontal cortex and the striatum and to a lesser extent in the hippocampus of rats[3]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- J Ethnopharmacol. 2023 Sep 20;117214.

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REFERENCES

[1]. Mingeot-Leclercq, M.P., et al., Piracetam inhibits the lipid-destabilising effect of the amyloid peptide Abeta C-terminal fragment. Biochim Biophys Acta, 2003. 1609(1): p. 28-38.

[2]. Muller, W.E., et al., Effects of piracetam on membrane fluidity in the aged mouse, rat, and human brain. Biochem Pharmacol, 1997. 53(2): p. 135-40.

[3]. Scheuer, K., et al., Piracetam improves cognitive performance by restoring neurochemical deficits of the aged rat brain. Pharmacopsychiatry, 1999. 32 Suppl 1: p. 10-6.

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