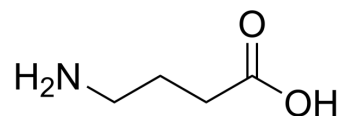


γ-Aminobutyric acid

Cat. No.:	HY-N0067
CAS No.:	56-12-2
Molecular Formula:	C ₄ H ₉ NO ₂
Molecular Weight:	103.12
Target:	GABA Receptor; Endogenous Metabolite
Pathway:	Membrane Transporter/Ion Channel; Neuronal Signaling; Metabolic Enzyme/Protease
Storage:	4°C, protect from light * In solvent : -80°C, 6 months; -20°C, 1 month (protect from light)



SOLVENT & SOLUBILITY

In Vitro	H ₂ O : 50 mg/mL (484.87 mM; Need ultrasonic)				
		Solvent Concentration	Mass 1 mg	5 mg	10 mg
	Preparing Stock Solutions	1 mM	9.6974 mL	48.4872 mL	96.9744 mL
		5 mM	1.9395 mL	9.6974 mL	19.3949 mL
		10 mM	0.9697 mL	4.8487 mL	9.6974 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 (969.74 mM); Clear solution; Need ultrasonic and warming and heat to 60°C				

BIOLOGICAL ACTIVITY

Description	γ-Aminobutyric acid (4-Aminobutyric acid) is a major inhibitory neurotransmitter in the adult mammalian brain, binding to the ionotropic GABA receptors (GABA _A receptors) and metabotropic receptors (GABA _B receptors). γ-Aminobutyric acid shows calming effect by blocking specific signals of central nervous system ^{[1][2]} .	
IC ₅₀ & Target	Microbial Metabolite	Human Endogenous Metabolite
In Vitro	<p>γ-Aminobutyric acid (30 μM) depolarizes cortical progenitor cells (E16 cells), results an inward current in ventricular zone (VZ) cells, and induces DNA synthesis inhibition, with half-maximal response concentration of 5 μM^[3].</p> <p>?Cortical plate (cp) neurons expresses glutamic acid decarboxylase (GAD), γ-Aminobutyric acid (1-5 μM; 18 h) stimulates the motility and arrests the migration of cp cells, while the chemotropic signal is involved G-protein activation^[4].</p> <p>?γ-Aminobutyric acid activates GABA_A receptors, causing cell cycle arrest in S phase and limiting growth^[5].</p> <p>MCE has not independently confirmed the accuracy of these methods. They are for reference only.</p> <p>Cell Migration Assay^[4]</p>	

Cell Line:	Cortical plate (cp) neurons
Concentration:	1-5 μ M
Incubation Time:	18 hours
Result:	Promoted motility via G-protein activation and arrested attractant-induced migration via GABAA receptor-mediated depolarization.

In Vivo

γ -Aminobutyric acid (33.95, 102.25, 306.75 mg/kg; p.o.; single dose) can enhance the sleep of mice^[6].
 γ -Aminobutyric acid (1, 2, 4 mg/kg/d; p.o.; 30 d) alleviates anxiety and restored food utilization rate in rats, with impairment induced by Di(2-ethylhexyl) phthalate (DEHP) exposure^[7].
 MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Pathogens free (SPF) Bagg's albino (Balb/c) mice (18–20 g, 8 weeks old) ^[6]
Dosage:	33.95, 102.25, 306.75 mg/kg
Administration:	Oral gavage; single dose; 20 mL/kg administration; measured in an hour
Result:	Prolonged the sleep duration, increased sleep rate, and shorten the sleep latency more effectively.
Animal Model:	Sprague-Dawley rat induced by DEHP (HY-B1945) (500 mg/kg) ^[7]
Dosage:	1, 2, 4 mg/kg
Administration:	Oral gavage; combined administration; for 30 consecutive days
Result:	Reduced the levels of nitric oxide and nitric oxide synthase in rats treated with DEHP.

CUSTOMER VALIDATION

- Life Sci. 2023 Oct 20:122191.
- Int J Food Sci Tech. 06 November 2021.

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REFERENCES

- [1]. Chen S, et al. Effects of dietary gamma-aminobutyric acid supplementation on the intestinal functions in weaning piglets. Food Funct. 2019 Jan 2.
- [2]. Okada R, et al. Gamma-aminobutyric acid (GABA)-mediated neural connections in the Drosophila antennal lobe. J Comp Neurol. 2009 May 1;514(1):74-91.

Caution: Product has not been fully validated for medical applications. For research use only.

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