β-Aminopropionitrile

Cat. No.: HY-Y1750

CAS No.: 151-18-8

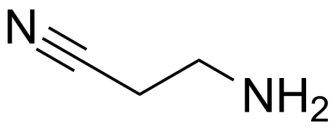
Molecular Formula: $C_3H_6N_2$

Molecular Weight: 70.09

Target: Monoamine Oxidase; Endogenous Metabolite

Pathway: Neuronal Signaling; Metabolic Enzyme/Protease

Storage: -20°C, protect from light, stored under nitrogen
* In solvent : -80°C, 6 months; -20°C, 1 month (protect from light, stored under nitrogen)



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (1426.74 mM; Need ultrasonic)
H_2O : 50 mg/mL (713.37 mM; Need ultrasonic)

Preparing Stock Solutions	Mass / Solvent / Concentration	1 mg	5 mg	10 mg
	1 mM	14.2674 mL	71.3369 mL	142.6737 mL
	5 mM	2.8535 mL	14.2674 mL	28.5347 mL
	10 mM	1.4267 mL	7.1337 mL	14.2674 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 (1426.74 mM); Clear solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 3.25 mg/mL (46.37 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 3.25 mg/mL (46.37 mM); Clear solution
4. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 3.25 mg/mL (46.37 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

β-Aminopropionitrile (BAPN) is a specific, irreversible and orally active lysyl oxidase (LOX) inhibitor. β-Aminopropionitrile targets the active site of LOX or LOXL isoenzymes[1][2].

IC_{50} & Target	Lysyl Oxidase	Human Endogenous Metabolite

In Vitro

β-Aminopropionitrile (BAPN) normalizes the expression of GLUT4 and adiponectin, and improves glucose uptake in an in vitro model of insulin resistance[1].

β-Aminopropionitrile (500 μM; 72 h) blocks the hypoxia-induced EMT morphological and marker protein changes, and inhibits invasion and migration capacities of cervical carcinoma cells in vitro[2].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Western Blot Analysis[1]

Cell Line:	3T3-L1 adipocytes
Concentration:	200 μM with 1.15 nM and 2.87 nM TNFα
Incubation Time:	72 h
Result:	TNFα reduced expression of GLUT4 and adiponectin, and increased SOCS3 protein levels in these cells. And these effects were prevented.

Cell Invasion Assay[2]

Cell Line:	HeLa and SiHa cells
Concentration:	500 μM
Incubation Time:	72 h
Result:	Significantly reduced hypoxia-elicited cell invasion in both cell models.

Cell Migration Assay [2]

Cell Line:	HeLa and SiHa cells
Concentration:	500 μM
Incubation Time:	72 h
Result:	Decreased hypoxia-induced migration from 180 and 240% to 60 and 70% in HeLa and SiHa cells, respectively.

Western Blot Analysis[2]

Cell Line:	HeLa and SiHa cells
Concentration:	500 μM
Incubation Time:	72 h
Result:	Effectively prevented hypoxia-induced downregulation of E-cadherin and strongly inhibited hypoxia-induced upregulation of α-SMA and vimentin.

In Vivo

β-Aminopropionitrile (BAPN) (100 mg/kg/day; p.o.; 6 weeks) reduces body weight gain and improves the metabolic profile in diet-induced obesity in rats[1].

β-Aminopropionitrile monofumarate (1 g/kg/day; p.o.; 4 weeks) induces thoracic aortic dissection in C57BL/6 mice[3].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Male Wistar rats of 150 g, high-fat diet (HFD) model[1]
Dosage:	100 mg/kg/day

Administration:	In the drinking water, 6 weeks
Result:	Significantly prevented the rise in body weight in HFD rats, but not in animals that were fed a standard diet. Reduced the increase in the weight of white adipose tissue (both epididymal and lumbar) in obese animals and attenuated their enhanced adiposity. Improved fasted glucose and insulin levels and consequently reduced HOMA index in the HFD group. Improved insulin signalling in adipose tissue from obese animals.

Animal Model:	C57BL/6 mice[3]
Dosage:	1 g/kg/day
Administration:	In the drinking water, 4 weeks
Result:	Induce thoracic aortic dissection (TAD) in all mice with 24 h of Ang II infusion. Caused 87% of C57BL/6 mice to develop TAD without Ang II.

REFERENCES

[1]. Ren W, et al. β-Aminopropionitrile monofumarate induces thoracic aortic dissection in C57BL/6 mice. Sci Rep. 2016 Jun 22;6:28149.

[2]. Miana M, et al. The lysyl oxidase inhibitor β-aminopropionitrile reduces body weight gain and improves the metabolic profile in diet-induced obesity in rats. Dis Model Mech. 2015 Jun;8(6):543-51.

[3]. Yang X, et al. Inactivation of lysyl oxidase by β-aminopropionitrile inhibits hypoxia-induced invasion and migration of cervical cancer cells. Oncol Rep. 2013 Feb;29(2):541-8.

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