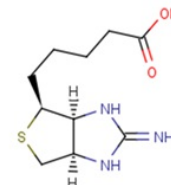


2-Iminobiotin

Chemical Properties

CAS No.:	13395-35-2
Formula:	C ₁₀ H ₁₇ N ₃ O ₂ S
Molecular Weight:	243.33
Appearance:	N/A
Storage:	0-4°C for short term (days to weeks), or -20°C for long term (months).



Biological Description

Description	2-Iminobiotin is a cyclic guanidino analog of biotin that acts as a reversible inhibitor of inducible nitric oxide synthase (iNOS) and neuronal NOS (nNOS; Ki of 21.8 and 37.5 μ M for mouse iNOS and rat nNOS, respectively).
Targets(IC ₅₀)	mouse iNOS: 21.8 μ M(Ki) rat nNOS: 37.5 μ M(Ki)
In vitro	All cultures were subjected to 25 h of hypothermia (33.5°C), and incubated with vehicle or 2-iminobiotin (2-IB) (10, 30, 50, 100, and 300 ng/ml). Cell morphology was evaluated by brightfield microscopy. Cell damage was analyzed by LDH assays. Production of reactive oxygen species (ROS) was measured using fluorometric assays. Western blotting for PARP, Caspase-3, and the phosphorylated forms of akt and erk1/2 was conducted. To evaluate early apoptotic events and signaling, cell protein was isolated 4 h post-hypoxia and human apoptosis proteome profiler arrays were performed. Twenty-five hour after the hypoxic insult, clear morphological signs of cell damage were visible and significant LDH release as well as ROS production were observed even under hypothermic conditions. Post-hypoxic application of 2-IB (10 and 30 ng/ml) reduced the hypoxia-induced LDH release but not ROS production. Phosphorylation of erk1/2 was significantly increased after hypoxia, while phosphorylation of akt, protein expression of Caspase-3 and cleavage of PARP were only slightly increased. Addition of 2-IB did not affect any of the investigated proteins. Apoptosis proteome profiler arrays performed with cellular protein obtained 4 h after hypoxia revealed that post-hypoxic application of 2-IB resulted in a \geq 25% down regulation of 10/35 apoptosis-related proteins: Bad, Bax, Bcl-2, cleaved Caspase-3, TRAILR1, TRAILR2, PON2, p21, p27, and phospho Rad17[1].
Cell Research	In vitro hypoxia was induced for 7 h in IMR-32 cell cultures by using our recently described system with minor modifications. Enzyme stock solutions (100x) of catalase and glucose oxidase were diluted in cell culture medium (DMEM/F12, 1% FCS; final concentration: 120 and 2 U/ml respectively). A rapid decrease of partial pressure of oxygen (pO ₂) to levels below 10 mmHg was achieved by adding the enzymes to glucose containing culture medium. Also a decline in glucose (<1 g/l) and pH (<7.0) was observed, resembling the clinical characteristics of hypoxic-ischemic injury in vivo. Hypoxic conditions were confirmed with a tissue oxygen pressure monitor. After the hypoxic insult, cells were washed twice with PBS and cultures were placed into an incubator at 33.5°C (hypothermia) employing culture medium with (i) solvent (citrate buffer 1%) or (ii) 2-IB at 10, 30, 50, 100, and 300 ng/ml. To determine the optimal "reperfusion" time, a time-interval curve investigating cell damage (LDH release) was performed. Analyses of LDH release, ROS generation, hydrogen peroxide release, metabolic activity, cell signaling, apoptosis-related protein expression/activity and expression analysis of 35 human apoptosis-related proteins were performed at different time points post-hypoxia[1]
Animal Research	

Solubility Information

Solubility

DMSO: 12.5 mg/mL (51.37 mM)
(< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	4.11 mL	20.548 mL	41.096 mL
5 mM	0.822 mL	4.11 mL	8.219 mL
10 mM	0.411 mL	2.055 mL	4.11 mL
50 mM	0.082 mL	0.411 mL	0.822 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. The storage conditions and period of the stock solution: - 80 °C for 6 months; - 20 °C for 1 month. Please use it as soon as possible.

Reference

1. Zitta K, Peeters-Scholte C, Sommer L, et al. 2-Iminobiotin Superimposed on Hypothermia Protects Human Neuronal Cells from Hypoxia-Induced Cell Damage: An in Vitro Study[J]. *Frontiers in Pharmacology*, 2018, 8:971.
2. Sup S J, Green B G, Grant S K. 2-Iminobiotin Is an Inhibitor of Nitric Oxide Synthases[J]. *Biochemical & Biophysical Research Communications*, 1994, 204(2):0-968.

Inhibitors · Natural Compounds · Compound Libraries

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Tel:781-999-4286

E-mail:info@targetmol.com

Address:36 Washington Street,Wellesley Hills,MA 02481