

4-Aminohippuric Acid

Chemical Properties

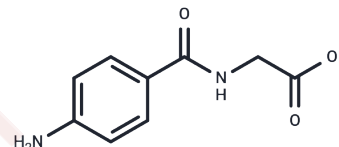
CAS No. : 61-78-9

Formula: C₉H₁₀N₂O₃

Molecular Weight: 194.19

Appearance: no data available

Storage: Powder: -20°C for 3 years | In solvent: -80°C for 1 year



Biological Description

Description	4-Aminohippuric Acid is the glycine amide of 4-aminobenzoic acid. Its sodium salt is used as a diagnostic aid to measure effective renal plasma flow (ERPF) and excretory capacity.
Targets(IC50)	Amino Acids and Derivatives
In vitro	In normal individuals, the renal extraction ratio of 4-Aminohippuric acid is approximately 0.92. After extraction, the majority of 4-Aminohippuric acid is actively secreted by the proximal tubules and completely excreted by the kidneys. The clearance of 4-Aminohippuric acid is utilized to measure renal plasma flow and to assess the secretory mechanisms or transport limits of renal tubules. The kinetics of 4-Aminohippuric acid uptake by cortical tubular cells have been measured using the stopped-flow microperfusion technique in rat kidneys. In a rat model of renal failure, intravenous injection of 3.0 mg/kg Uranyl nitrate significantly reduced the CLPAH to 0.89 mL/min/kg, compared to 29.30 mL/min/kg in normal rats. Rats with chronic kidney failure exhibited altered pharmacokinetics, showing decreased renal excretion of 4-Aminohippuric acid. Compared to Sham rats, those with chronic kidney failure demonstrated a weakened load of excretion, filtration, and secretion of 4-Aminohippuric acid, with about a 40% reduction in the expression of OAT1 in the homogenate and membrane. Hence, measuring the renal clearance of 4-Aminohippuric acid typically reflects the kidney's capacity for organic anion transport.
In vivo	At a concentration of 10 mmol/L, 4-Aminohippuric acid was transported across membranes of HEK293 cells expressing MRP2 with a rate of 21.9 pmol/mg protein/min. The kinetic parameters for 4-Aminohippuric acid transport included a Km value of 880 mM and a Vmax value of 2.3 nmol/mg protein/min, indicating facilitated transport through organic anion transporters expressed in epithelial cells. Additionally, 4-Aminohippuric acid uptake by HEK293 cells, mediated by overexpressed and transfected NPT1, exhibited saturable kinetics in line with Michaelis-Menten dynamics, having a Km close to 2.66 mM and a Vmax of 940 pmol/mg protein/30s. This compound is also transported by transporters other than OAT, including NPT1 and MRP2.

Solubility Information

A DRUG SCREENING EXPERT

Solubility	DMSO: 50 mg/mL (257.48 mM),Sonication is recommended. Ethanol: 2 mg/mL (10.3 mM),Sonication is recommended. H2O: 3 mg/mL (15.45 mM),Sonication is recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)
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Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	5.1496 mL	25.748 mL	51.496 mL
5 mM	1.0299 mL	5.1496 mL	10.2992 mL
10 mM	0.515 mL	2.5748 mL	5.1496 mL
50 mM	0.103 mL	0.515 mL	1.0299 mL

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

Reference

- Sekine T, et al. J Biol Chem, 1997, 272(30), 18526-18529.
Uchino H, et al. Biochem Biophys Res Commun. 2000, 270(1), 254-259.
Leier I, et al. Kidney Int, 2000, 57(4), 1636-1642.
Ullrich KJ, et al. Pflugers Arch, 1987, 409(6), 547-554.
Gloff CA, et al. J Pharmacokinet Biopharm, 1989, 17(2), 169-177.

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