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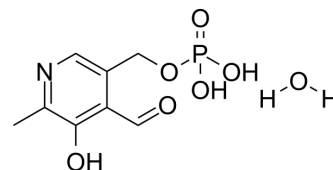
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Pyridoxal 5'-phosphate monohydrate

Cat. No.:	HY-W011727A
CAS No.:	41468-25-1
Molecular Formula:	C ₈ H ₁₂ NO ₇ P
Molecular Weight:	265.16
Target:	Endogenous Metabolite; Amyloid-β; ERK
Pathway:	Metabolic Enzyme/Protease; Neuronal Signaling; MAPK/ERK Pathway; Stem Cell/Wnt
Storage:	4°C, sealed storage, away from moisture * In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture)



SOLVENT & SOLUBILITY

In Vitro	H ₂ O : 6.25 mg/mL (23.57 mM; Need ultrasonic)				
	DMSO : 5 mg/mL (18.86 mM; ultrasonic and warming and heat to 60°C)				
	Preparing Stock Solutions	Solvent Concentration Mass	1 mg	5 mg	10 mg
		1 mM	3.7713 mL	18.8565 mL	37.7131 mL
		5 mM	0.7543 mL	3.7713 mL	7.5426 mL
		10 mM	0.3771 mL	1.8857 mL	3.7713 mL
Please refer to the solubility information to select the appropriate solvent.					
In Vivo	1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline Solubility: ≥ 0.5 mg/mL (1.89 mM); Clear solution				
	2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline) Solubility: ≥ 0.5 mg/mL (1.89 mM); Clear solution				

BIOLOGICAL ACTIVITY

Description	Pyridoxal 5'-phosphate hydrate, the active form of vitamin B6, is an essential cofactor for multiple enzymes, including aromatic l-amino acid decarboxylase that catalyzes the final stage in the production of the neurotransmitters dopamine and serotonin. Pyridoxal 5'-phosphate hydrate is the most important coenzyme variant in the process of vitamin B6 intracellular phosphorylation and is interconvertible with other variants, including pyridoxine 5'-phosphate (PNP) and pyridoxamine 5'-phosphate (PMP) ^{[1][2]} .
IC ₅₀ & Target	IC50: active form of vitamin B6 ^[1]
In Vitro	Pyridoxal 5'-phosphate monohydrate (500 μM, 24 h) activates the ERK/c-Jun signaling pathway, promotes the expression of IGFBP1 protein in HepG2 cells ^[3] .

Pyridoxal 5'-phosphate monohydrate (0.5 mg/mL, 48h) inhibits the proliferation of cancer cells SK-OV-3 and OVCAR-3^[5]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Western Blot Analysis^[3]

Cell Line:	HepG2
Concentration:	500 μ M
Incubation Time:	24 h
Result:	Promoted the phosphorylation of ERK1 and c-Jun protein.

Cell Proliferation Assay^[5]

Cell Line:	SK-OV-3 and OVCAR-3
Concentration:	0.5 mg/mL
Incubation Time:	48 h
Result:	Inhibited the proliferation.

In Vivo

Pyridoxal 5'-phosphate monohydrate (1 mg/kg, ip, single dose) alleviates A β 25-35-induced spatial memory impairment and long-term memory impairment in mouse models^[4].

Pyridoxal 5'-phosphate monohydrate (600 mg/kg/day, po for 16 weeks) inhibits the formation of advanced glycation end-products (AGEs), and prevents the progression of diabetic nephropathy in Streptozotocin (HY-13753)-induced rats diabetes model^[6].

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

Animal Model:	A β 25-35-induced cognitive dysfunction in ICR mouse models ^[4]
Dosage:	1 mg/kg
Administration:	ip, single dose
Result:	Alleviated spatial and long-term memory impairment.

Animal Model:	Streptozotocin (HY-13753)-induced rats diabetes model ^[6]
Dosage:	600 mg/kg
Administration:	po for 16 weeks
Result:	Prevented the diabetes.

CUSTOMER VALIDATION

- Nat Immunol. 2023 Jan;24(1):162-173.

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REFERENCES

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- [2]. Choi JM, et al., Membrane-Free Stem Cells and Pyridoxal 5'-Phosphate Synergistically Enhance Cognitive Function in Alzheimer's Disease Mouse Model. *Antioxidants (Basel).* 2022 Mar 21;11(3):601.
- [3]. Zhang L, et al., Pyridoxine 5'-phosphate oxidase is a novel therapeutic target and regulated by the TGF- β signalling pathway in epithelial ovarian cancer. *Cell Death Dis.* 2017 Dec 13;8(12):3214.
- [4]. Nakamura S, et al., Pyridoxal phosphate prevents progression of diabetic nephropathy. *Nephrol Dial Transplant.* 2007 Aug;22(8):2165-74.
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- [6]. Calderón-Ospina CA, et al. B Vitamins in the nervous system: Current knowledge of the biochemical modes of action and synergies of thiamine, pyridoxine, and cobalamin. *CNS Neurosci Ther.* 2020 Jan;26(1):5-13.
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Caution: Product has not been fully validated for medical applications. For research use only.

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