Product Data Sheet

Product Name: 2,4-DPD
Cat. No.: GC16195

Chemical Properties

Cas. No.	41438-38-4		
Chemical Name	2,4-pyridinedicarboxylic acid, diethyl ester		
SMILES	O=C(OCC)C1=NC=CC(C(OCC)=O)=C1		
Formula	$C_{11}H_{13}NO_4$	M.Wt	223.2
Solubility	≤50mg/ml in ethanol;20mg/ml in DMSO;30mg/ml in dimethyl formamide	Storage	Store at -20°C
General tips	For obtaining a higher solubility , please warm the tube at 37 ℃ and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20℃ for several months.		
Shipping Condition	Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.		
Structure	2,4-DPD		

Background

2,4-DPD is a cell permeable, competitive inhibitor of the oxygen-sensing enzyme HIF-α prolyl hydroxylase (HIF-PH) [1].

Hypoxia-inducible factor (HIF) is a transcription factor with a key role in cellular responses to hypoxia in a variety of organisms. The HIF system plays an important role in angiogenesis, erythropoiesis, energy utilization, glucose/energy metabolism, tumour development, and ischaemic/hypoxic disease. Genetic or pharmacological inactivation of the HIF hydroxylases results in a constitutive activation of the HIF pathway with little or even absent regulation by oxygen remaining. The oxygen-sensing enzyme HIF-α prolyl hydroxylase catalyzes hydroxylation of specific prolyl and asparaginyl residues in the regulatory HIF-α subunits [2].

Exposure to 2,4-DPD limited prolyl 4-hydroxylase activity in C. elegans., where their esters are hydrolyzed to form competitors of a -ketoglutarate. 2,4-DPD showed dramatic

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effects among the progeny. When exposed to a high level of 2,4-DPD (2.7 mM), all progeny died regardless of genotype of C. elegans. The dead embryos arrested at the twofold stage [1].

References:

[1] Friedman L, Higgin J J, Moulder G, et al. Prolyl 4-hydroxylase is required for viability and morphogenesis in Caenorhabditis elegans[J]. Proceedings of the National Academy of Sciences, 2000, 97(9): 4736-4741.

[2] Schofield C J, Ratcliffe P J. Signalling hypoxia by HIF hydroxylases[J]. Biochemical and biophysical research communications, 2005, 338(1): 617-626.