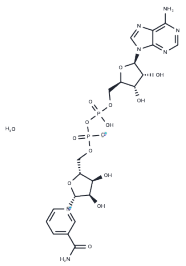
Data Sheet (Cat.No.T1609)

TargetMol

NAD+

Chemical Properties



CAS No. :	53-84-9
Formula:	C21H27N7O14P2
Molecular Weight:	663.43
Appearance:	no data available
Storage:	store at low temperature,keep away from direct sunlight,store under nitrogen Powder: -20°C for 3 years | In solvent: -80°C for 1 year

Biological Description

Description	NAD+ (β-Nicotinamide Adenine Dinucleotide) is a coenzyme composed of ribosylnicotinamide 5'-diphosphate coupled to adenosine 5'-phosphate by pyrophosphate linkage. It is found widely in nature and is involved in numerous enzymatic reactions in which it serves as an electron carrier by being alternately oxidized (NAD+) and reduced (NADH).
Targets(IC50)	Endogenous Metabolite,NADPH
In vitro	**METHODS**: HEK293 cells were treated with FK866 (2 μM) and NAD+ (100 μM) for 48 h. Metabolic activity was determined by MTT Assay. **RESULTS**: Addition of FK866 to the culture medium resulted in rapid depletion of intracellular NAD stores and inhibition of the metabolic activity of NADPH-dependent dehydrogenase. When supplemented with additional NAD+, the metabolic activity of the cells returned to control levels. [1] **METHODS**: Isolated microvessels from rat retina were treated with NAD+ (0-1000 nM) for 0-24 h. Cell death was detected using trypan blue dye. **RESULTS**: Exposure to NAD+ increased microvascular cell death in a dose-dependent manner, with the half-maximum effective concentration of NAD+ being approximately 2 nM. assessment of the time course of NAD+-induced vascular toxicity showed that cell death was detected after 16 h of NAD+ exposure. [2]
In vivo	**METHODS**: To study the effects on ischemia/reperfusion (I/R) injury, NAD+ (5-20 mg/kg) was injected intravenously into Wistar rats with myocardial ischemia/reperfusion. **RESULTS**: Injections of 10-20 mg/kg NAD+ dose-dependently reduced I/R-induced myocardial infarction, with a dose of 20 mg/kg NAD+ reducing infarction by approximately 85%. Injection of NAD+ significantly reduced I/R-induced apoptotic cardiac injury. [3]

Solubility Information

Solubility	5% DMSO+95% Saline: 0.33 mg/mL (0.5 mM),Solution. PBS: 100 mg/mL (150.73 mM),Sonication is recommended. H2O: 50 mg/mL (75.37 mM),Sonication and heating are recommended. (< 1 mg/ml refers to the product slightly soluble or insoluble)

Preparing Stock Solutions

	1mg	5mg	10mg
1 mM	1.5073 mL	7.5366 mL	15.0732 mL
5 mM	0.3015 mL	1.5073 mL	3.0146 mL
10 mM	0.1507 mL	0.7537 mL	1.5073 mL
50 mM	0.0301 mL	0.1507 mL	0.3015 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

Kulikova V, et al. Degradation of Extracellular NAD+ Intermediates in Cultures of Human HEK293 Cells. Metabolites. 2019 Nov 29;9(12):293.
Liu X, Zhou J, Meng M, et al. A Mo2-ZnP Molecular Device that Mimics Photosystem I for Solar-Chemical Energy Conversion. Applied Catalysis B: Environmental. 2021, 286: 119836.
Zhang H, Liang B, Sang X, et al.Discovery of Potential Inhibitors of SARS-CoV-2 Main Protease by a Transfer Learning Method.Viruses.2023, 15(4): 891.
Liao SD, et al. NAD+-induced vasotoxicity in the pericyte-containing microvasculature of the rat retina: effect of diabetes. Invest Ophthalmol Vis Sci. 2006 Nov;47(11):5032-8.
Zhang Y, et al. Exogenous NAD(+) administration significantly protects against myocardial ischemia/reperfusion injury in rat model. Am J Transl Res. 2016 Aug 15;8(8):3342-50.