Product Information

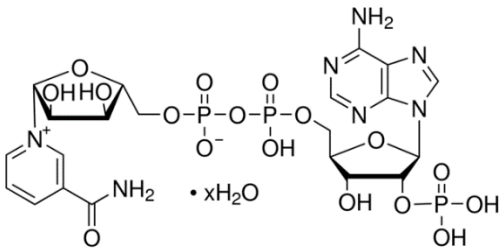
β-Nicotinamide adenine dinucleotide phosphate hydrate

N5755

Product Description

CAS Registry Number: 53-59-8
Molecular Formula: $C_{21}H_{28}N_7O_{17}P_3 \bullet xH_2O$
Formula Weight: 743.41 (anhydrous)
Synonyms: β-NADP, Coenzyme II, TPN, NADP, Triphosphopyridine nucleotide
E^{mM} (260 nm) = 18.0 (0.1 M phosphate, pH 7.0)[1]
Absorbance Ratios:
A_{250}/A_{260}: 0.83
A_{280}/A_{260}: 0.21

Structure:



β-NADP is a coenzyme necessary for the alcoholic fermentation of glucose and the oxidative dehydrogenation of other substrates. It occurs widely in living tissue, especially the liver. Nicotinic acid can be converted to nicotinamide in the body and, in this form, is found as a component of two oxidation-reduction coenzymes:

- Nicotinamide adenine dinucleotide (NAD)
- Nicotinamide adenine dinucleotide phosphate (NADP)

The nicotinamide portion of the coenzyme transfers hydrogens by alternating between oxidized quaternary nitrogen and a reduced tertiary nitrogen.

Enzymes that contain NAD or NADP are usually called dehydrogenases. NADP is an essential coenzyme for glucose-6-phosphate dehydrogenase, which catalyzes the oxidation of glucose-6-phosphate to 6-phosphogluconic acid. This reaction initiates glucose metabolism by a pathway other than the citric acid cycle. This route is known as the hexose phosphate shunt or phosphogluconate pathway.[2]

Other enzymes that use NADP as a coenzyme include:

- Alcohol Dehydrogenase:NADP Dependent
- Aromatic ADH:NADP Dependent
- Ferredoxin-NADP Reductase
- L-Fucose Dehydrogenase
- Gabase
- Galactose-1-Phosphate Uridyl Transferase
- Glucose Dehydrogenase
- L-Glutamic Dehydrogenase
- Glycerol Dehydrogenase:NADP Specific
- Isocitric Dehydrogenase
- Malic Enzymes
- 5,10-Methylenetetrahydrofolate Dehydrogenase
- 6-Phosphogluconate Dehydrogenase
- Succinic Semialdehyde Dehydrogenase

β-Nicotinamide Adenine Dinucleotide Phosphate is prepared enzymatically by the phosphorylation of β-Nicotinamide Adenine Dinucleotide. Probable decomposition products are β-NAD and monophosphoadenosine diphosphoribose.

Several theses[3-5] and dissertations[6-11] have cited use of product N5755 in their research.

Precautions and Disclaimer

For R&D use only. Not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

β-NADP is soluble in water at 50 mg/mL. Aqueous β-NADP solutions stored as frozen aliquots are expected to be stable for at least one year. Repeated freeze-thaw cycles are **not** recommended.[12]

β-NADP is also soluble in methanol, but much less soluble in ethanol, and practically insoluble in ether and ethyl acetate.[13]

Storage/Stability

Store this product at –20 °C.

References

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12. Schultz, M.B. *et al.*, *Methods Mol. Biol.*, **1813**, 77-90 (2018).
13. *The Merck Index*, 12th ed., Entry #6433, p. 1089 (1996).

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