Product Information

β-Nicotinamide adenine dinucleotide sodium salt

N0632

Product Description

CAS Registry Number: 20111-18-6

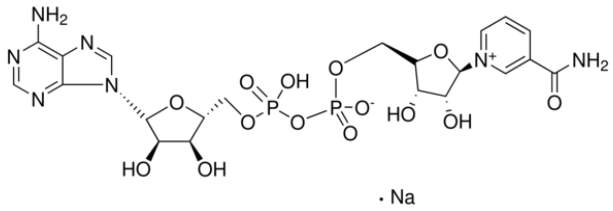
Molecular Formula: $C_{21}H_{26}N_7O_{14}P_2Na$

Molecular Weight: 685.4

Synonyms: β-NAD, β-DPN

Extinction coefficient (free acid): E^{mM} = 18.0 (260 nm, pH 7)[1]

Structure:



β-NAD is a pyridine nucleotide and biologically active form of nicotinic acid. β-NAD is a coenzyme necessary for the catalytic reaction of certain enzymes. β-NAD is a carrier for hydride ion, forming β-NADH. Hydride ion is enzymatically removed from a substrate molecule by the action of dehydrogenases, such as malic dehydrogenase and lactic dehydrogenase. Such enzymes catalyze the reversible transfer of a hydride ion from malate or lactate to β-NAD to form the reduced product, β-NADH. Unlike β-NAD, which has no absorbance at 340 nm, β-NADH absorbs at 340 nm (E^{mM} = 6.22). The increase in absorbance at 340 nm with the formation of β-NADH is the basis for measurement of activity of many enzymes.[2,3]

Many metabolites and enzymes of biological interest are present in tissues at low concentrations. With the use of β-NAD as a catalyst intermediate and several enzymes in a multistep system, known as enzyme cycling, much greater sensitivity for detection of these components is achieved. The reduced form, β-NADH, is fluorescent, whereas β-NAD is not. This difference in fluorescence provides a sensitive fluorescent measurement of the oxidized or reduced pyridine nucleotides at concentrations down to 10^{-7} M.[3,4]

Several theses[5-8] and dissertations[9-17] have cited use of N0632 in their research protocols.

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.

Storage/Stability

β-NAD is very hygroscopic and should be stored desiccated,[18] at –20 °C.

Solubility

β-NAD, sodium salt, is tested for solubility in water at 50 mg/mL.

Aqueous solutions between pH 2-6, when stored as single-use aliquots at –70 °C, are stable for at least 6 months. Neutral or slightly acidic solutions are stable at 0 °C for at least 2 weeks. Solutions are rapidly degraded upon heating and are very labile in alkaline solutions, especially in the presence of phosphate, maleate, or carbonate. The rates of degradation of solutions at different pH and temperature conditions have been reported. Solutions are also sensitive to light.[19,20]

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