3050 Spruce Street
Saint Louis, Missouri 63103 USA
Telephone 800-325-5832 • (314) 771-5765
Fax (314) 286-7828
email: techserv@sial.com
sigma-aldrich.com

ProductInformation

β-Nicotinamide adenine dinucleotide, lithium salt from Saccharomyces cerevisiae

Product Number **N 7132** Storage Temperature -0 °C

Product Description Molecular Formula: $C_{21}H_{27}N_7O_{14}P_2Li$
Molecular Weight: 669.4
CAS Number: 64417-72-7
Extinction Coefficient (free acid): E^{mM} = 18.0 (260 nm, pH 7)[1] Synonym: β-NAD, DPN

β-NAD, a pyridine nucleotide and biologically active form of nicotinic acid, 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]

Precautions and Disclaimer
For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions β-NAD, lithium salt, is soluble in water (50 mg/ml), yielding a clear solution (gentle heating and sonication may be necessary).

Storage/Stability β-NAD is very hygroscopic and should be stored desiccated.[5] Aqueous solutions between pH 2 - 6, 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.[6,7]

References

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4. Enzymatic Analysis, A Practical Guide, Passonneau, J.V., and Lowry, O.H., The Humana Press, Inc., (Totowa, NJ:1993), 85-110.
5. Data for Biochemical Research, 3rd ed., Dawson, R. M. C., et al., Oxford University Press (New York, NY: 1986), p 130-131.
6. Lowry, O. H., et al., The stability of pyridine nucleotides. J. Biol. Chem., **236**, 2756 (1961).

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