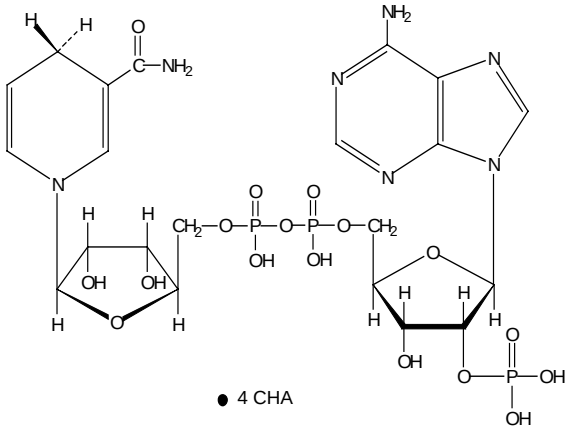
ProductInformation

ß-NICOTINAMIDE ADENINE DINUCLEOTIDE PHOSPHATE
REDUCED FORM TETRA(CYCLOHEXYLAMMONIUM) SALT
Sigma Prod. No. N5130

CAS NUMBER: 100929-71-3
SYNONYMS: NADPH, ß-NADPH, TPNH
(Also available as potassium, tris, and sodium salts)
ANALOGS: 3'-ß-NADPH, α-NADPH, DeaminoNADPH, ThioNADPH



PHYSICAL PROPERTIES:

Appearance: white to light yellow powder
Molecular Formula: $C_{21}H_{30}N_7O_{17}P_3A(C_6H_{13}N)_4$
Formula Weight: 1142.1
E^{mM}(340nm) = 6.22 (pH >10)
(A260nm/A340nm) = 2.32

DESCRIPTION:

ß-Nicotinamide Adenine Dinucleotide Phosphate, Reduced Form, is prepared by the chemical reduction of ß-Nicotinamide Adenine Dinucleotide Phosphate. The cyclohexylammonium form is prepared for work requiring sodium free systems.

STABILITY / STORAGE AS SUPPLIED:

The recommended storage condition for ß-NADPH is dark and desiccated at -20°C. The expected shelf-life is approximately two years. The normal impurities and/or decomposition products are ß-NADP and Monophospho-Adenosine 5'-Diphosphoribose.

SOLUTION / SOLUTION STABILITY:

Sigma routinely tests the solubility of this product at 50 mg/mL in 0.01M sodium hydroxide. A clear, light yellow solution is obtained. A 0.5mM solution in 0.02M NaOH (pH 12.3) showed no loss of purity in a week at 4°C or -85°C, but a 13% loss at -20°C.[1]

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APPLICATIONS:

ß-NADPH is a product of the pentose phosphate pathway, a multifunctional pathway whose primary purpose is to generate reducing power in the form of ß-NADPH.[2] ß-NADPH transfers H^+ and $2e^-$ to oxidized precursors in the reduction reactions of biosynthesis. Thus, ß-NADPH cycles between catabolic and biosynthetic reactions and serves as the carrier of reducing power in the same way that ATP serves as the carrier of energy.[3] ß-NADPH is also involved with Cytochrome P450 electron transport systems.[2]

Enzymes employing ß-NADPH as a coenzyme include glutathione reductase, diacetyl reductase, dihydrofolate reductase, glutamic dehydrogenase, p-hydroxybenzoate hydroxylase, NADPH-FMN oxidoreductase, nitrate reductase and thioredoxin reductase.

REFERENCES:

1. Passonneau, J.V. and O.H. Lowry, *Enzymatic Analysis A Practical Guide*, p. 15.
2. *Textbook of Biochemistry With Clinical Correlations*, Thomas M Devlin, Editor, Wiley-Liss, p. 360-365 and p. 987.
3. *Biochemistry A Problems Approach*, William B. Wood, et.al., Editors, W.A. Benjamin, Inc., p. 195.