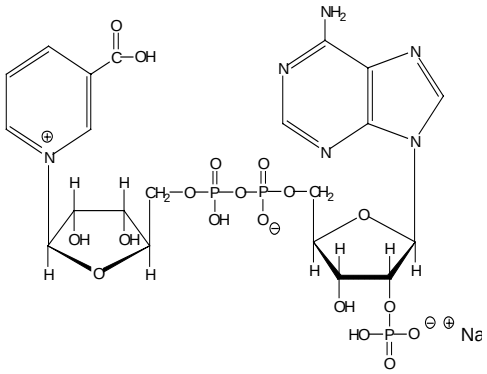
ProductInformation

NICOTINIC ACID ADENINE DINUCLEOTIDE PHOSPHATE
SODIUM SALT
Sigma Prod. No. N5655



CAS NUMBER: 5502-96-5
SYNONYMS: Nicotine-TPN; ß-NAADP

PHYSICAL DESCRIPTION:
Appearance: white powder
Molecular formula of free acid: $C_{21}H_{27}N_6O_{18}P_3$
Molecular weight of free acid: 744.4
E^{mM}(260nm) = 18 (0.1 M phosphate, pH 7)[1]
E^{mM}(260nm)= 17.5(pH 12)[2]
Extensive analytical data have been published.[2,3]

STORAGE / STABILITY AS SUPPLIED:

ß-NAADP showed less than 2% loss per year when stored at -20°C with desiccant.[1]

SOLUBILITY / SOLUTION STABILITY:

β-NAADP dissolves readily in water at 50 mg/mL, giving a clear colorless solution. Solutions of 10 mg/mL stored at 2-8°C at neutral pH are expected to lose 2-5% per week. Solutions stored at -20°C lost between 2-5% after six months.[1]

METHOD OF PREPARATION:

This was enzymatically prepared by substituting nicotinic acid for nicotinamide (of NADP). It was purified using ion exchange chromatography, followed by precipitation and desiccation.[1] The compound can be chemically prepared (by alkaline treatment of NADP) or enzymatically prepared.[2-5]

GENERAL REMARKS:

ß-NAADP, an analog of ß-NADP, is a specific activator of intracellular calcium ion release from sea urchin egg homogenates, active in nanomolar concentrations (ED_{50} = 16 nM[4]; 160 nM for total activation[5]). (HPLC-purified NADP does not trigger such release.) The mechanism appears distinct from the release systems triggered by inositol 1,4,5-triphosphate (IP_3) or by cyclic ADP-ribose (cADPR), since the NAADP-induced Ca^{2+} release is not blocked by heparin (antagonist of IP_3) or by procaine or ruthenium red (antagonists of cADPR). The mechanism is selectively blocked by thionicotinamide-NADP which does not inhibit IP_3 or cADPR.[4,5]

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REFERENCES:

1. Sigma production.
2. Imai, T., *J. Biochem.*, 118, 196-203 (1995).
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4. Chini, E.N., Beers, K.W. and Dousa, T.P., *J. Biol. Chem.*, 270, 3216-3223 (1995).
5. Lee, H.C. and Aarhus, R., *J. Biol. Chem.*, 270, 2152-2157 (1995).