

PRODUCT INFORMATION



3-Acetylpyridine NAD

Item No. 21884

CAS Registry No.: 86-08-8

Formal Name: adenosine 5'-(trihydrogen diphosphate),
P'→5'-ester with 3-acetyl-1-β-D-
ribofuranosylpyridinium, inner salt

Synonyms: APAD, NSC 20275

MF: C₂₂H₂₈N₆O₁₄P₂

FW: 662.4

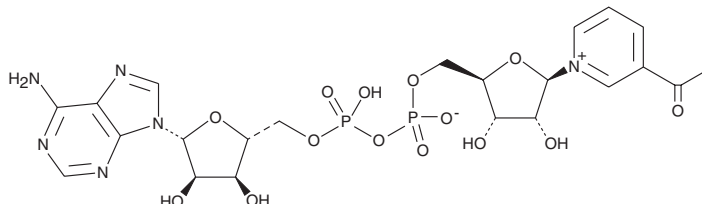
Purity: ≥95%

UV/Vis.: λ_{max}: 261 nm

Supplied as: A crystalline solid

Storage: -20°C

Stability: ≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

3-Acetylpyridine NAD (APAD) is supplied as a crystalline solid. Aqueous solutions of APAD can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of APAD in PBS (pH 7.2) is approximately 10 mg/ml. We do not recommend storing the aqueous solution for more than one day.

Description

APAD is an analog of NAD⁺ (free acid) (nicotinamide adenine dinucleotide; Item No. 16077), a signaling molecule and cofactor or substrate for many enzymes.^{1,2} APAD has been used to study the mechanisms of oxidative phosphorylation.³ It can be reduced by transdehydrogenase from NADH (sodium salt) (Item No. 16078).⁴ It can be reduced more efficiently and is more stable than NAD⁺; thus, it is useful as a substitute.⁵

References

1. Houtkooper, R.H., Cantó, C., Wanders, R.J., *et al.* The secret life of NAD⁺: An old metabolite controlling new metabolic signaling pathways. *Endocr. Rev.* **31**(2), 194-223 (2010).
2. Ciaccio, E.I. The inhibition of lactate dehydrogenase by 3-acetylpyridine adenine dinucleotide and bisulfite. *J. Biol. Chem.* **241**(7), 1581-1586 (1966).
3. Birrell, J.A. and Hirst, J. Investigation of NADH binding, hydride transfer, and NAD⁺ dissociation during NADH oxidation by mitochondrial complex I using modified nicotinamide nucleotides. *Biochemistry* **52**(23), 4048-4055 (2013).
4. Stilwell, S.N., Bizouam, T., and Jackson, J.B. The reduction of acetylpyridine adenine dinucleotide by NADH: Is it a significant reaction of proton-translocating transhydrogenase, or an artefact? *Biochim Biophys. Acta.* **1320**(1), 83-94 (1997).
5. Lee, H.J., Lee, S.H., Park, C.B., *et al.* Coenzyme analogs: Excellent substitutes (not poor imitations) for electrochemical regeneration. *Chem. Commun. (Camb.)* **47**(46), 12538-12540 (2011).

WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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