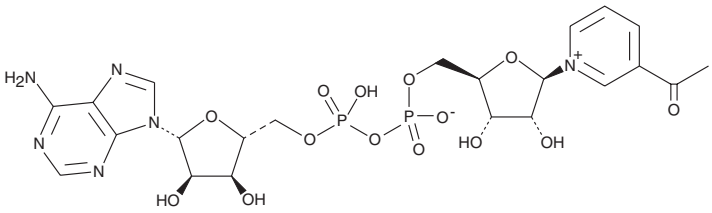
PRODUCT INFORMATION

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:	$C_{22}H_{28}N_6O_{14}P_2$
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).

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