



Product Information

Aldehyde Dehydrogenase, potassium-activated from baker's yeast (*S. cerevisiae*)

Product Number **A 6338**

Storage Temperature -0 °C

Product Description

Enzyme Commission (EC) Number: 1.2.1.5

CAS Number: 9028-88-0

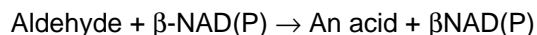
Molecular Weight: 228 kDa¹

Extinction Coefficient: $E^{1\%} = 9.4$ (279 nm)¹

Synonym: Aldehyde:NAD[P]⁺ oxidoreductase

Aldehyde dehydrogenase from baker's yeast is a tetramer consisting of subunits of approximately 57 kDa. The molecular weights of its monomer, dimer, trimer, and tetramer are 57 kDa, 114 kDa, 171 kDa, and 228 kDa, respectively. The monomers are thought to be assembled into tetramers in a heterologous square arrangement.² The enzyme exists as several different isoforms and is localized in both the cytosol and mitochondria.³ Direct binding studies with the coenzyme in the absence of aldehyde indicate 4 NAD binding sites per tetrameric molecule.⁴

The enzyme catalyzes the following reaction:



The enzyme can catalyze the oxidation of a wide range of substrates, including: acetaldehyde, formaldehyde, propionaldehyde, n-butylaldehyde, isobutylaldehyde, n-valeraldehyde, caproaldehyde, benzaldehyde, glycoaldehyde, D-glyceraldehyde, malonic semialdehyde, and succinic aldehyde.¹

Aldehyde dehydrogenase is inhibited by propylurea, crotonaldehyde, n-propyl isocyanate, cyclohexyl isocyanate, 1-n-propyl-1-[(4-chlorophenyl)sulphonyl]-3-n-propylurea, and 1-methyl-1-[(4-chlorophenyl)sulphonyl]-3-n-propylurea.⁵

Aldehyde dehydrogenase may be utilized to quantitate aldehydes present in blood.⁶

Precautions and Disclaimer

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

Preparation Instructions

This enzyme is soluble in 100 mM Tris HCl buffer, pH 8.0, containing 0.02% BSA (0.3 mg/ml), yielding a clear, colorless solution.

References

1. Tamaki, N., and Hama, T., Aldehyde dehydrogenase from baker's yeast. *Meth. Enzymol.*, **89(D)**, 469-473 (1982).
2. Tamaki, N., et al., Studies on the oligomeric structure of yeast aldehyde dehydrogenase by crosslinking with bifunctional reagents. *Journal of Biochemistry*, **83(3)**, 21-25 (1978).
3. Wang, X., et al., Molecular cloning, characterization, and potential roles of cytosolic and mitochondrial aldehyde dehydrogenases in ethanol metabolism in *Saccharomyces cerevisiae*. *J. Bacteriol.*, **180(4)**, 822-830 (1998).
4. Bostian, K. A., and Betts, G. F., Rapid purification and properties of potassium-activated aldehyde dehydrogenase from *Saccharomyces cerevisiae*. *Biochem. J.*, **173(3)**, 773-786 (1978).
5. Handbook of Enzyme Inhibitors, 2nd ed., Zollner, H., ed., VCH (New York, NY: 1993), pp. 36-37.
6. Lundquist, F., Enzymic determination of acetaldehyde in blood. *Biochem. J.*, **68(1)**, 172-177 (1958).

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