

Status: Currently Official on 13-Feb-2025
Official Date: Official Prior to 2013
Document Type: Reagents
DocId: GUID-9DDC222D-F480-4F06-865B-90CFF8AEAFB4_1_en-US
DOI: https://doi.org/10.31003/USPNF_R1959_01_01
DOI Ref: v6nzo

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Aldehyde Dehydrogenase

—A white powder. One mg contains not less than 2 enzyme activity units.

Assay: Transfer about 20 mg, accurately weighed, to a 200-mL volumetric flask, dissolve in 1 mL of water, dilute with an ice-cold solution of bovine serum albumin (1 in 100) to volume, and mix. Use this solution as the *Assay preparation*. Dissolve 3.3 g of potassium pyrophosphate, 15 mg of dithiothreitol, and 40 mg of edetate disodium in 70 mL of water, adjust with citric acid monohydrate solution (2.1 in 10) to a pH of 9.0 ± 0.1 , dilute with water to 100 mL, and mix to obtain a *pH 9.0 buffer*. Dissolve an accurately weighed quantity of β -nicotinamide adenine dinucleotide (β -NAD) in water to obtain a *β -NAD solution* having a known concentration of about 20 mg per mL. Pipet 0.1 mL of the *Assay preparation* into a 1-cm spectrophotometric cell. Pipet 0.1 mL of water into a second 1-cm spectrophotometric cell to provide the reagent blank. Add 2.5 mL of *pH 9.0 buffer*, 0.2 mL of *β -NAD solution*, and 0.1 mL of pyrazole solution (0.68 in 100) to each cell, and mix. Stopper the cells, and allow to stand for 2 minutes at $25 \pm 1^\circ$. Add 0.01 mL of acetaldehyde solution (0.3 in 100) to each cell, and mix. Stopper the cells, and determine the absorbance of the solution obtained from the *Assay preparation* at a wavelength of 340 nm, using the solution obtained from the reagent blank as the reference. Calculate the change, ΔA , in absorbance per minute for the solution obtained from the *Assay preparation*, starting at the point when the absorbance and time relationship becomes linear. One enzyme activity unit is defined as the amount of enzyme that oxidizes 1 μ mol of acetaldehyde per minute when the test is conducted under the conditions described herein. Calculate the enzyme activity units in each mg of aldehyde dehydrogenase taken by the formula:

$$[(2.91)(200)/(6.3)(0.1)(1000)](\Delta A/W)$$

in which ΔA is as defined above and W is the weight, in g, of aldehyde dehydrogenase taken.

Auxiliary Information - Please [check for your question in the FAQs](#) before contacting USP.

Topic/Question	Contact	Expert Committee
ALDEHYDE DEHYDROGENASE	Margareth R.C. Marques Principal Scientific Liaison	HDQ Headquarters

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