

NAD⁺/NADH assay kit

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CATALOG #

AAA11441

PRODUCT SYNONYMS

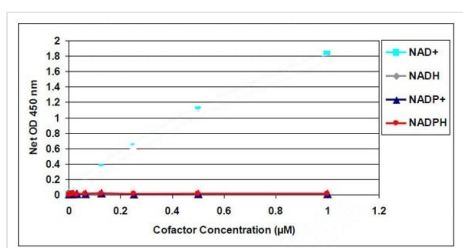
NAD⁺/NADH; NAD⁺/NADH Assay Kit; NAD⁺/NADH assay kit

PRODUCT SPECIFICATIONS

Preparation and Storage

Upon receipt, store the NAD Cycling Enzyme and NAD⁺ Standard at -80 degree C. Store the Colorimetric Probe at -20 degree C. Store the remaining components at 4 degree C.

IMAGES



Standard Curve (Sample)

ADDITIONAL INFORMATION

Related Product Information for NAD ⁺ /NADH assay kit	Background: Nicotinamide adenine dinucleotide (NAD) is a complex organic molecule found in all living cells. NAD consists of two nucleotides, adenine and nicotinamide, connected through phosphate groups. NAD exists as an oxidized form (NAD⁺) and a reduced form (NADH). In cells, NAD⁺ acts as an electron acceptor, becoming reduced from other molecules to form NADH. The resulting NADH can then act as a reducing agent, donating electrons. An example of this occurs when reduced compounds, such as glucose and fatty acids, become oxidized and transfer energy via electrons to NAD⁺ to form NADH. This electron transfer chemistry is observed in glycolysis and the citric acid cycle. In eukaryotic cells, NADH electrons made in the cytoplasm are transported to mitochondrial NAD⁺ by mitochondrial shuttles such as the malate-aspartate shuttle. The mitochondrial NADH is then oxidized by the electron transport chain that pumps protons across a membrane, generating ATP through a process known as oxidative phosphorylation. In addition to electron transfer, NAD⁺ and NADH are also used as enzyme substrates to add or remove posttranslational modifications from proteins, as in the process of ADP-ribosylation. NAD⁺ is also consumed by NAD-dependent deacetylases known as sirtuins. These enzymes can transfer an acetyl group from their substrate protein to the ADP-ribose of NAD, which then cleaves the coenzyme and releases nicotinamide and O-acetyl-ADP-ribose. Non-eukaryotic DNA ligases, which join two DNA ends, also operate in an NAD⁺ dependent fashion by using NAD⁺ as a substrate to donate an adenosine monophosphate (AMP) moiety to one of the 5' phosphate DNA ends. The resulting intermediate is then attacked by the 3' hydroxyl group of the other DNA end, forming the final phosphodiester bond. NAD⁺ has also been identified as an extracellular signaling molecule. NAD⁺ is released from neurons in the large intestine, blood vessels, urinary bladder, neurosecretory cells and from brain synaptosomes. NAD⁺ is therefore a novel neurotransmitter that transmits a signal from nerves to effector cells. NAD⁺/NADH Assay Kit is a simple colorimetric assay that measures NAD⁺ and NADH present in biological samples such as cell lysates or tissue extracts in a 96-well microtiter plate format. The kit is specific for NAD⁺, NADH, and their ratio. The kit will not detect NADP⁺ or NADPH. Each kit provides sufficient reagents to perform up to 100 assays, including blanks, NAD⁺ standards and unknown samples. The total NAD⁺/NADH concentrations of unknown samples are determined by comparison with a known NAD⁺ standard. Determination of both NAD⁺ and NADH requires two separate samples for quantification. NAD⁺ and NADH do not need to be purified from samples, but rather can be extracted individually with a simple acid or base treatment prior to performing the assay. The kit has a detection sensitivity limit of approximately 4 nM NAD⁺. Principle of the Assay: NAD⁺/NADH Assay Kit is a convenient quantitative tool that measures NAD⁺ and NADH within biological samples. The assay is based on an enzymatic cycling reaction in which NAD⁺ is reduced to NADH. NADH reacts with a colorimetric probe that produces a colored product which can be measured at 450 nm. The intensity of the product color is proportional to the NAD⁺ and NADH within a sample. A simple acid or base treatment will differentiate NADH from NAD⁺ within a sample. Samples and standards are incubated for 1-4 hours and then read with a standard 96-well colorimetric plate reader (Figure 1). Samples are compared to a known concentration of NAD⁺ standard within the 96-well microtiter plate format.
Product Categories/Family for NAD ⁺ /NADH assay kit	Metabolism Research; Cellular Metabolism; NAD ⁺ /NADH Assay

For Research Use Only. Not for use in diagnostic or therapeutic procedures. Small volumes of product may become entrapped in the seal of the vial during shipment and storage; if necessary, briefly centrifuge the vial on a tabletop centrifuge to dislodge any liquid in the cap.

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Online datasheet: <https://stage.aaabiotech.com/assay-kits/nad-nadh/11441>