CREATIVE BIOMART®
Assay Kit

Aldehyde Dehydrogenase Activity Assay Kit

Product Information

Cat.No. Kit-0073

Product Overview

Aldehyde Dehydrogenase Assay provides a fluorescence-based method for detecting ALDH activity in tissue homogenates, cell culture samples, and purified ALDH preparations. In the assay, ALDH catalyzes the oxidation of acetaldehyde to acetic acid, along with the concomitant reduction of NAD+ to NADH. NADH reacts with the fluorometric developer to yield a highly fluorescent product which can be analyzed with an excitation wavelength of 530-540 nm and an emission wavelength of 585-595 nm.

Description

Aldehyde dehydrogenases (ALDHs) represent a group of enzymes that oxidize a wide range of endogenous and exogenous aldehydes to their corresponding carboxylic acids. Endogenous aldehydes are formed during the metabolism of amino acids, carbohydrates, lipids, biogenic amines, vitamins, and steroids. The human ALDH superfamily comprises 19 isozymes that possess important physiological and toxicological functions. The ALDH1A subfamily plays a pivotal role in embryogenesis and development by mediating retinoic acid signaling. The ALDH2 isozyme is predominantly linked with acetaldehyde detoxification in the second step of alcohol metabolism. The amount of acetaldehyde to which cells or tissues are exposed after alcohol ingestion may be of great importance and may, among others, affect carcinogenesis. ALDH1A1 and ALDH3A1 are lens and corneal crystallins, which are essential elements of the cellular defense mechanism against ultraviolet radiation-induced damage in ocular tissue. ALDH1 activity has been shown to be increased in cancer stem cells and has been used to isolate cancer stem cells in different cancers. Recently, pharmacological inhibitors have been developed for three of the 19 ALDH isozymes. These are the enzymes involved in the metabolism of alcohol (ALDH2) and the anticancer oxazaphophorine drugs (ALDH1A1 and ALDH3A1). Increased or suppressed ALDH activity has been implicated in a variety of diseases, including cancer, Type II hyperprolinemia, Sjögren-Larsson Syndrome, Parkinson"s Disease, Cardiac Disease, and hyperammonemia. Therefore, the application of pharmacological inhibitors or activators of ALDHs represents a rational approach for the treatment of these pathological condition.

Tel: 1-631-559-9269 1-516-512-3133
Email:info@creative-biomart.org
Fax:1-631-938-8127
45-1 Ramsey Road, Shirley, NY 11967, USA

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Usage

Please read these instructions carefully before beginning this assay. For research use only. Not for human or diagnostic use.Acetaldehyde is carcinogenic. It is toxic if inhaled, ingested, or if in contact with skin. In case of contact with skin or eyes, rinse immediately with plenty of water for 15 minutes. Keep away from combustible materials.

Storage

Stability: 6 months;Storage: -20°C;Acetaldehyde should be stored 4°C as it will degrade over time at -20°C. Acetaldehyde has a stability of one week at -20°C. This kit will perform as specified if stored at -20°C and used before the expiration date indicated on the outside of the box.

Kit Components

The kit will arrive as two packages at different shipping temperatures. Acetaldehyde has to be stored at 4°C for best stability. However, if the acetaldehyde was frozen, it will be fine for one week -20°C. Remove from freezer and place at 4°C. For best results, remove components and store as stated below.HEPES Buffer (500 mM; pH 8.0): 1 vial/10 ml -20°C;ALDH Positive Control: 1 vial/100 µl -20°C;Acetaldehyde Assay Reagent: 1 vial/200 µl 4°C;ALDH Enzyme Mixture: 2 vials/400 µg -20°C;ALDH Cofactor 2: vials/3 mg -20°C;Fluorometric Developer Reagent: 2 vials/60 µg -20°C;NADH Standard: 2 vials/1.5 mg -20°C;96-Well Solid Plate (black): 1 plate Room temperature;96-Well Cover Sheet: 1 cover Room temperature.

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