CREATIVE BIOMART®
Assay Kit

Neutrophil Elastase Activity Assay Kit

Product Information

Cat.No. Kit-0322

Product Overview

Neutrophil elastase is stored within cytoplasmic azurophilic granules in the neutrophil and released upon stimulation by pathogens where it acts either as free protein or is associated with networks of extracellular traps (NET). Together with other proteases released from activated neutrophils, neutrophil elastase plays a critical role in degrading invading pathogens and thus provides the earliest line of defense in the immune system. It is thought to play a critical role in tumor invasion and metastasis as well as other inflammatory conditions. Neutrophil Elastase Activity Assay kit is designed to be used to study compounds regulating elastase release in neutrophils. The kit employs a specific non-fluorescent elastase substrate, (Z-Ala-Ala-Ala-Ala)2Rh110, which is selectively cleaved by elastase to yield the highly fluorescent compound R110, which can be analyzed with an excitation wavelength of 485 nm and emission wavelength of 525 nm. Reagents needed to isolate neutrophils from whole blood are included in the kit, as is PMA, which is known to stimulate elastase release from neutrophils.

Description

Neutrophil elastase is the form of elastase that predominates in neutrophils, which are the most abundant type of leukocyte in human blood. The active enzyme is mainly stored within cytoplasmic azurophilic granules in the neutrophil until extruded out of the cells. Upon stimulation by pathogens or pharmacological agents such as phorbol myristate acetate (PMA), neutrophil elastase is excreted from the cell and exists either as free protein or associated with networks of extracellular traps (NET). Together with other proteases released from activated neutrophils, neutrophil elastase plays a critical role in degrading invading pathogens and thus provides the earliest line of defense in the immune system. In addtition to its expression in neutrophils, neutrophil elastase is also expressed in non-small cell lung cancer tumors and cell lines such as U937 cells and HL-60 cells. Neutrophil elastase may play a critical role in tumor invasion and metastasis, due to its ability to degrade insoluble elastin and other extracellular matrix constituents. Mutations in ELA2, the gene encoding neutrophil elastase, are the major cause of the two main forms of hereditary neutropenia. More recent studies reveal that neutrophil elastase is also involved in a variety of inflammatory

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human conditions such as chronic lung diseases and cancers. Because of its roles in various diseases including cancers, neuthophil elastase is of interest as a potential therapeutic target.

Usage

Please read these instructions carefully before beginning this assay. For research use only. Not for human or diagnostic use.

Storage

Stability: 1 year;Storage: -20°C;The kit should be stored at -20°C. Once it is opened, remove the Cell-Based Assay (Z-Ala-Ala-Ala-Ala)2Rh110 and PMA (1 mM) Assay Reagent from the kit and store at -20°C. Store the Human Neutrophil Elastase Assay Reagent and Cell-Based Assay Neutrophil Isolation Histopaque at 4°C. The rest of the components may be stored at room temperature. The kit will perform as specified if used before the expiration date indicated on the outside of the box.

Kit Components

Kit will arrive packaged as a -20°C kit. For best results, remove components and store as stated below.Cell-Based Assay Buffer Tablet: 1 vial/3 tablets, Room Temperature;RBC Lysis Buffer (10X): 1 vial/10 ml, Room Temperature;Cell-Based Assay Neutrophil Isolation Histopaque: 1 vial/25, ml 4°C;PMA (1 mM) Assay Reagent: 1 vial/50 µl, -20°C;Cell-Based Assay (Z-Ala-Ala-Ala-Ala)2Rh110: 1 vial/50 µl, -20°C;Human Neutrophil Elastase Assay Reagent: 1 vial/50 µl, -20°C;Cell-Based Assay DMF: 1 vial/2.5 ml, Room Temperature;96-Well Solid Plate (black) with lid: 2 plates, Room Temperature