

Meso Scale Discovery[®]

MULTI-ARRAY[®] Assay System

Human IL-1 α Assay
Ultra-Sensitive Kit

1-Plate Kit

K151AFC-1

5-Plate Kit

K151AFC-2

25-Plate Kit

K151AFC-4

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MSD MULTI-ARRAY Assay

Ultra-Sensitive Kit

Human IL-1 α Assay

This package insert must be read in its entirety before using this product.

FOR RESEARCH USE ONLY.

NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES.

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Table of Contents

table of contents

Introduction.....	4
Principle of the Assay	5
Reagents Supplied	6
Required Material and Equipment – not supplied.....	6
Safety	6
Reagent Preparation	7
Assay Protocol.....	9
Analysis of Results	9
Typical Standard Curve	10
Sensitivity	10
Spike Recovery	11
Linearity	11
Samples.....	12
References	12
Summary Protocol	15
Plate Diagrams	17

Ordering Information

Ordering information

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Introduction

introduction

Interleukin-1 (IL-1) was one of the first cytokines discovered; it is comprised of two distinct proteins, IL-1 α and IL-1 β . IL-1 α is a cytokine involved in the response associated with defense against infection, inflammatory process and hematopoiesis. IL-1 together with an antigen or mitogen functions as a costimulator of T cell proliferation. Synthesized as a biologically active precursor molecule without a signal peptide,^[1] most IL-1 α (in precursor form) remains in the cytosol while some is transported to the cell surface membrane of many cells, particularly monocytes and B lymphocytes.^[2-3] In general, IL-1 α is not found in the circulation or in body fluids except in severe disease states where the cytokine may be released from dying cells.^[4] After cell death, IL-1 α precursor is released and can be cleaved by extracellular proteases.^[5]

The action of IL-1 is mediated through receptors IL-1 RI and IL-1 RII plus IL-1 RAcP, a non-binding receptor accessory protein. IL-1 RI is found in low number on nearly all cells while IL-1 RII is primarily found on neutrophils, monocytes and β -lymphocytes.^[2] Signaling occurs only when IL-1 is complexed to IL-1 RI; IL-1 RI and IL-1 RAcP then work together to activate the NF- κ B pathway.^[6-11] IL-1 binds to IL-1 RII but does not initiate signaling; therefore IL-1 RII plays a role in negative feedback.^[12-14] Serum contains soluble forms of both IL-1 RI and IL-1 RII. IL-1Ra (IL-1 receptor antagonist) binds to the soluble form of IL-1 RI and competes with IL-1. When IL-1 displaces IL-1Ra on the soluble form of IL-1 RI, the action of IL-1 is enhanced.^[2, 15-16] The soluble form of IL-1 RII has a much lower affinity for IL-1Ra, which intensifies its antagonist activity.

Most cell lines, in particular epithelial cells and tumor cell lines, contain constitutive levels of IL-1 α which has also been shown to be critical for several IFN- γ activities.^[17-18] Overproduction of IL-1 α is thought to play a role in viral, bacterial, fungal and parasitic infections; leukemias; asthma; Alzheimer's disease and autoimmune disorders.^[19]

Principle of the Assay

principle of the assay

MSD[®] assays provide a rapid and convenient method for measuring the levels of protein targets within a single small-volume sample. The assays are available in both singleplex and multiplex formats. The antibody for a specific protein target is coated on one electrode (or “spot”) per well. The Human IL-1 α Assay detects IL-1 α in a sandwich immunoassay format (Figure 1). For this assay, MSD provides a Cytokine Panel 14 plate that has been pre-coated with capture antibodies on spatially distinct spots. The position of IL-1 α capture antibody is indicated in Figure 1 and on the plate packaging. The user adds the sample and a solution containing the labeled detection antibody— anti-IL-1 α labeled with an electrochemiluminescent compound, MSD SULFO-TAG[™] label—over the course of one or more incubation periods. IL-1 α in the sample binds to capture antibody immobilized on the working electrode surface; recruitment of the labeled detection antibody by bound IL-1 α completes the sandwich. The user adds an MSD read buffer that provides the appropriate chemical environment for electrochemiluminescence and loads the plate into an MSD SECTOR[®] instrument for analysis. Inside the SECTOR instrument, a voltage applied to the plate electrodes causes the labels bound to the electrode surface to emit light. The instrument measures intensity of emitted light to afford a quantitative measure of IL-1 α present in the sample.

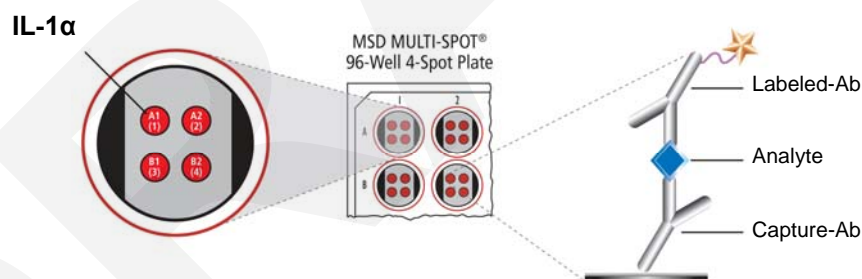


Figure 1. Spot diagram showing placement of analyte capture antibody on Cytokine Panel 14 Plate. The numbering convention for the different spots is maintained in the software visualization tools, on the plate packaging, and in the data files. A unique bar code label on each plate allows complete traceability back to MSD manufacturing records.

