AssayMax Human Resistin ELISA Kit

Catalog # ER1001-1
Lot #

Introduction

Resistin, a novel adipose-derived protein, has been proposed to cause insulin-resistant states in obesity (1). Resistin is produced by white and brown adipose tissues but has also has been identified in several other tissues, including the hypothalamus, pituitary and adrenal glands, pancreas, gastrointestinal tract, myocytes, spleen, white blood cells and plasma. Resistin antagonizes insulin action, and is down regulated by rosiglitazone and peroxisome proliferator-activated receptor gamma agonists (2). Resistin is elevated in patients with type 2 diabetes and may play a role in the vascular complications of this disorder (3). Recently, Resistin has been discussed controversially as a missing link between obesity and insulin resistance (4)

Principal of the Assay

The AssayMax Human Resistin ELISA kit is designed for detection of human resistin in plasma, tissue, and cell culture supernatants. This assay employs a quantitative sandwich enzyme immunoassay technique which measures resistinin 5 hours. A murine monoclonal antibody specific for resistin has been pre-coated onto a microplate. Resistinin standards and samples is sandwiched by the immobilized antibody and a biotinylated polyclonal antibody specific for resistin, which is recognized by a streptavidin-peroxidase conjugate. All unbound material is then washed away and a peroxidase enzyme substrate is added. The color development is stopped and the intensity of the color is measured.

Caution and Warning

- This kit is for research use only.
- The kit should not be used beyond the expiration date.
- The Stop Solution is an acid solution.

Reagents

- **Resistin Microplate:** A 96 well polystyrene microplate (12 strips of 8 wells) coated with a monoclonal antibody against resistin.
- **Sealing Tapes:** Each kit contains 3 pre-cut, pressure-sensitive sealing tapes that can be cut to fit the format of the individual assay.
- **Resistin Standard:** Human resistin in a buffered protein base (4 ng, lyophilized).

- **Biotinylated resistin Antibody (40x):** A 100-fold biotinylated polyclonal antibody against human resistin (200 µl).
- **Streptavidin-Peroxidase Conjugate (SP Conjugate):** A 100-fold concentrate (120 µl)
- **EIA Diluent Concentrate (10x):** A 10-fold buffered protein base (20 ml).
- **Wash Buffer Concentrate (10x)**: A 10-fold concentrated buffered surfactant (2 x 30 ml).
- **Chromogen Substrate**: A ready-to-use stabilized peroxidase chromogen substrate tetramethylbenzidine (8 ml).
- **Stop Solution**: A 0.5 N hydroxychloric acid (12 ml) to stop the chromogen substrate reaction.

Storage Condition

- Store unopened kit at 2-8^{0}C up to expiration date.
- Opened reagents may be stored for up to 1 month at 2-8^{0}C. Store reconstituted standard at -20^{0}C or below.
- Opened unused strip wells may return to the foil pouch with the desiccant pack, reseal along zip-seal. May be stored for up to 1 month in a vacuum desiccator.

Other Supplies Required

- Microplate reader capable of measuring absorbance at 450 nm
- Pipettes (1-20 µl, 20-200 µl, and multiple channel)
- Deionized or distilled reagent grade water

Sample Collection, Preparation and Storage

- **Plasma:** Collect plasma using one-tenth volume of 0.1 M sodium citrate as an anticoagulant. Centrifuge samples at 2,000x g for 10 minutes and assay. Dilute samples 1:5 with EIA Diluent. Store the remaining samples at -20^{0}C or below. Avoid repeated freeze-thaw cycles.
- **Serum:** Samples should be collected into a serum separator tube. After clot formation, centrifuge samples at 2,000 x g for 10 minutes. Remove serum and assay. Dilute samples 1:5 into EIA Diluent. Store serum at -20^{0}C or below. Avoid repeated freeze-thaw cycles
- **Cell Culture Supernatants:** Centrifuge cell culture media at 2,000x g for 10 minutes to remove debris. Collect supernatants and assay. Store samples at -20^{0}C or below. Avoid repeated freeze-thaw cycles.

Reagent Preparation

- Freshly dilute all reagents and bring all reagents to room temperature before use. If crystals have formed in the concentrate, mix gently until the crystals have completely dissolved.
- **Standard Curve:** Reconstitute the 4 ng of human Resistin Standard with 1 ml of EIA Diluent to generate a stock solution of 4 ng/ml. Allow the standard to sit for 10 minutes with gentle agitation prior to making dilutions. Prepare triplicate standard points by serially diluting the Resistin standard solution (4 ng/ml) twofold with equal volume of EIA Diluent to produce 2, 1, 0.5, 0.25, and 0.125 ng/ml solutions. EIA Diluent serves as the zero standard (0 ng/ml).

Standard Point	Dilution	[Resistin] (ng/ml)
P1	1 part Standard (4 ng/ml)	4.000
P2	1 part P1 + 1 part EIA Diluent	2.000
P3	1 part P2 + 1 part EIA Diluent	1.000
P4	1 part P3 + 1 part EIA Diluent	0.500
P5	1 part P4 + 1 part EIA Diluent	0.250
P6	1 part P5 + 1 part EIA Diluent	0.125
P7	EIA Diluent	0.000

- **EIA Diluent Concentrate (10x):** Dilute EIA Diluent Conc. 1:10 with reagent grade water.
- **Biotinylated Resistin Antibody (40x):** Spin down the antibody briefly and dilute the desired amount of the antibody 1:40 with EIA Diluent.
- **Wash Buffer Concentrate (10x):** Dilute Wash Buffer Conc. 1:10 with reagent grade water.
- **SP Conjugate (100x):** Spin down the SP Conjugate briefly and dilute the desired amount of the conjugate 1:100 with EIA Diluent.

Assay Procedure

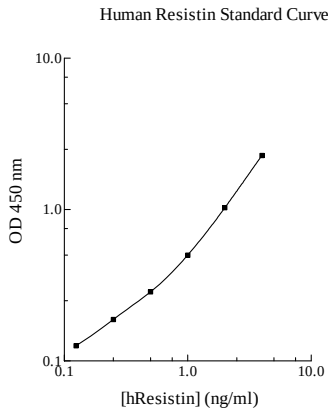
- Prepare all reagents, working standards and samples as instructed. Bring all reagents to room temperature before use. The assay is performed at room temperature (20-30^{0}C).
- Remove excess microplate strips from the plate frame and return them immediately to the foil pouch with desiccant inside. Reseal the pouch securely to minimize exposure to water vapor and store in a vacuum desiccator.
- Add 50 µl of Standard or sample per well. Cover wells and incubate for two hours. Start the timer after the last sample addition.
- Wash five times with 200 µl of Wash Buffer. Invert the plate and decant the contents, and hit it 4-5 times on absorbent paper towel to complete remove liquid at each step.
- Add 50 µl of Biotinylated Resistin Antibody to each well and incubate for two hours.
- Wash five times with 200 µl of Wash Buffer as above.
- Add 50 µl of Streptavidin-Peroxidase Conjugate per well and incubate for 30 minutes. Turn on the microplate reader and set up the program in advance.
- Wash five times with 200 µl of Wash Buffer as above.
- Add 50 µl of Chromogen Substrate per well and incubate for about 10 minutes or till the optimal blue color density develops. Gently tap the plate to ensure thorough mixing and break the bubbles in the well with pipette tip.
- Add 50 µl of Stop Solution to each well. The color will change from blue to yellow.
- Read the absorbance on a microplate reader at a wavelength of 450 nm **immediately**. Please note that some unstable black particles may be generated at high concentration points after stopping the reaction for about 10 minutes, which will reduce the readings.

Data Analysis

- Calculate the mean value of the triplicate readings for each standard and sample.
- To generate a standard curve, plot the graph using the standard concentrations on the x-axis and the corresponding mean 450 nm absorbance on the y-axis. The best-fit line can be determined by regression analysis using 4-parameter or log-log curve fit.
- Determine the unknown sample concentration from the Standard Curve and multiply the plasma or serum mean value by the dilution factor of 5.

Standard Curve

- The curve is provided for illustration only. A standard curve should be generated each time the assay is performed.



Performance Characteristics

- The minimum detectable level of Resistin is typically < 100 pg/ml.
- Intra-assay and inter-assay coefficients of variation were 5.1 % and 8.3% respectively.
- No significant cross-reactivity or interference was observed.

References

1. Fujita H *et. al.* (2002) *Biochem Biophys Res Commun.* 298(3):345-9
2. Adeghate E. (2004) *Cell Mol Life Sci.* 61(19-20):2485-96
3. Calabro P *et. al.* (2004) *Circulation* 23;110(21):3335-40
4. Schaffler A *et. al.* (2004) *Horm Metab Res.* 36(10):702-7

Revision 2.2