



Human Resistin ELISA

Catalog Number EA-0205

(For Research Use Only)

Introduction

Adipocytokines are a group of diverse effector molecules that are produced by adipose cells. Abnormal expression of adipokines such as Resistin is associated with the development of insulin resistance, diabetes and other metabolic and cardiovascular disorders in man. Mouse Resistin was described as a novel obesity-mediated adipocytokine that impairs glucose homeostasis by affecting both insulin-stimulated glucose uptake in adipose tissue and hepatic glucose production during fasting. However, there were initially two opposite views on human Resistin. Some studies have shown the correlations between Resistin and obesity. Serum Resistin levels increase with increased adiposity (1-4) and conversely, decline with decreased adiposity following medical treatment (5). However, other studies presented contradictory evidences that significantly decreased serum concentrations of resistin with increased adiposity (6-11). Resistin has also been shown to increase the expression of several pro-inflammatory cytokines including IL-1, IL-6, IL-12, and TNF- α via NF- κ B.

Principle of the assay

Resistin ELISA is based on the principle of a solid phase enzyme-linked immunosorbent assay. The assay utilizes a mouse anti-human Resistin antibody for immobilization on the microtiter wells and mouse anti-human Resistin antibodies along with streptavidin conjugated to horseradish peroxidase (HRP) for detection. The test sample is allowed to react simultaneously with the two antibodies, resulting in the Resistin molecules being sandwiched between the solid phase and enzyme-linked antibodies. After incubation, the wells are washed to remove unbound-labeled antibodies. A HRP substrate, TMB, is added to result in the development of a blue color. The color development is then stopped with the addition of Stop Solution changing the color to yellow. The concentration of Resistin is directly proportional to the color intensity of the test sample. Absorbance is measured spectrophotometrically at 450 nm.

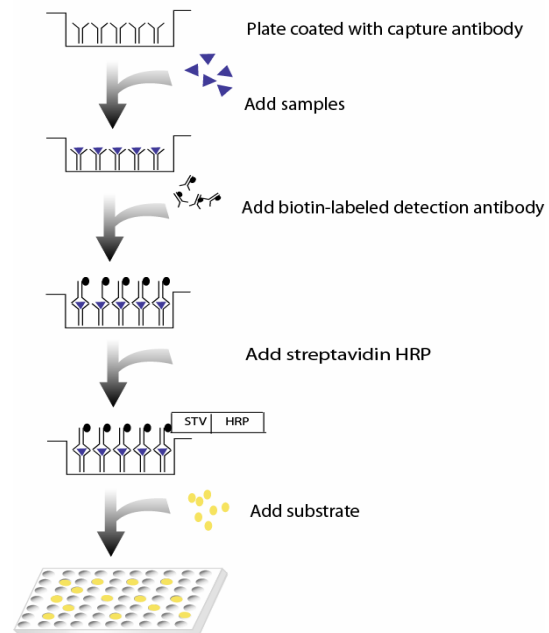


Diagram of ELISA

Materials provided with the kit

- 96 well microplate coated with a mouse anti-human Resistin antibody (4°C).
- Biotin labeled mouse anti-human Resistin antibodies (45 μ g/ml) (-20°C).
- Streptavidin-HRP conjugate (4°C).
- Recombinant Resistin standard (30ng/ml) (-20°C).
- 1X Diluent buffer (4°C).
- 5X Assay wash buffer (RT)
- Substrate (4°C).
- Stop Solution (4°C).

Material required but not provided

- Microplate reader capable of measuring absorbance at 450 nm
- Deionized or distilled water.

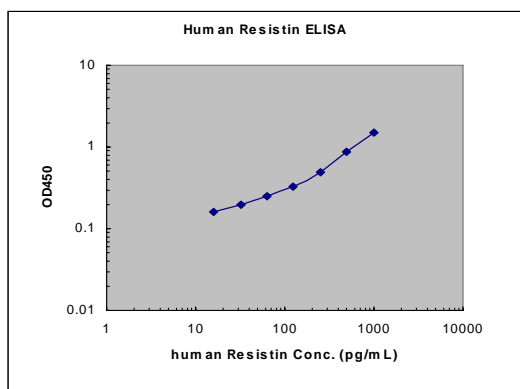
Reagent preparation before starting experiment

- Dilute the 5x Assay wash buffer to 1x buffer
40ml 5x Assay wash buffer
160ml ddH₂O
- Dilute 30 times of human recombinant Resistin (30ng/ml) with 1X Diluent buffer to 1000pg/ml and then 2-fold serial dilutions.
- Dilute 400 times of biotin labeled mouse anti-human Resistin antibody with 1X Diluent buffer before use.
- Dilute 200 times of streptavidin-HRP with 1X Diluent buffer before use.

Assay procedure

1. Cut the sealing film over the plate and remove it from the desired number of well strips. Make sure the rest of wells are well sealed.
2. Add 100 μ l of Standard, control, or sample per well and incubate for 1 hour at room temperature with gentle shaking.
3. Aspirate each well and wash by adding 200 μ l of 1X Assay wash buffer. Repeat the process three times for a total of three washes. Complete removal of liquid at each wash. After the last wash, remove any remaining liquid by inverting the plate against clean paper towels.
4. Add 100 μ l of diluted biotin-labeled mouse anti-human Resistin antibody to each well and incubate for 1 hour at room temperature with gentle shaking.
5. Repeat the aspiration/wash as in step 3.
6. Add 100 μ l of diluted streptavidin-HRP conjugate to each well and incubate for 45 min at room temperature with gentle shaking.
7. Repeat the aspiration/wash as in step 3.
8. Add 100 μ l substrate to each well and incubate for 5-30 minutes.
9. Add 50 μ l of Stop solution to each well. The color in the wells should change from blue to yellow.
10. Determine the optical density of each well with a microplate reader at 450 nm within 30 minutes.

Example of standard curve



References

- (1) Degawa-Yamauchi M, Bovenkerk JE, Juliar BE, Watson W, Kerr K, Jones R, Zhu Q, Considine RV (November 2003). "Serum resistin (FIZZ3) protein is increased in obese humans". *J. Clin. Endocrinol. Metab.* 88 (11): 5452–5
- (2) Vendrell J, Broch M, Vilarrasa N, Molina A, Gómez JM, Gutiérrez C, Simón I, Soler J, Richart C (June 2004). "Resistin, adiponectin, ghrelin, leptin, and proinflammatory cytokines: relationships in obesity". *Obes. Res.* 12 (6): 962–71.
- (3) Asensio C, Cettour-Rose P, Theander-Carrillo C, Rohner-Jeanrenaud F, Muzzin P (May 2004). "Changes in glycemia by leptin administration or high-fat feeding in rodent models of obesity/type 2 diabetes suggest a link between resistin expression and control of glucose homeostasis". *Endocrinology* 145 (5): 2206–13.
- (4) Lee JH, Bullen JW, Stoyneva VL, Mantzoros CS (March 2005). "Circulating resistin in lean, obese, and insulin-resistant mouse models: lack of association with insulinemia and glycemia". *Am. J. Physiol. Endocrinol. Metab.* 288 (3): E625–32.
- (5) Valsamakis G, McTernan PG, Chetty R, Al Daghri N, Field A, Hanif W, Barnett AH, Kumar S (April 2004). "Modest weight loss and reduction in waist circumference after medical treatment are associated with favorable changes in serum adipocytokines". *Metab. Clin. Exp.* 53 (4): 430–4.
- (6) Fain JN, Cheema PS, Bahouth SW, Lloyd Hiler M (January 2003). "Resistin release by human adipose tissue explants in primary culture". *Biochem. Biophys. Res. Commun.* 300 (3): 674–8.
- (7) Lee JH, Chan JL, Yiannakouris N, Kontogianni M, Estrada E, Seip R, Orlova C, Mantzoros CS (October 2003). "Circulating resistin levels are not associated with obesity or insulin resistance in humans and are not regulated by fasting or leptin administration: cross-sectional and interventional studies in normal, insulin-resistant, and diabetic subjects". *J. Clin. Endocrinol. Metab.* 88 (10): 4848–56.
- (8) Nagaev I, Smith U (July 2001). "Insulin resistance and type 2 diabetes are not related to resistin expression in human fat cells or skeletal muscle". *Biochem. Biophys. Res. Commun.* 285 (2): 561–4.
- (9) Heilbronn LK, Rood J, Janderova L, Albu JB, Kelley DE, Ravussin E, Smith SR (April 2004). "Relationship between serum resistin concentrations and insulin resistance in nonobese, obese, and obese diabetic subjects". *J. Clin. Endocrinol. Metab.* 89 (4): 1844–8.
- (10) Savage DB, Sewter CP, Klenk ES, Segal DG, Vidal-Puig A, Considine RV, O'Rahilly S (October 2001). "Resistin / Fizz3 expression in relation to obesity and peroxisome proliferator-activated receptor-gamma action in humans". *Diabetes* 50 (10): 2199–202.
- (11) Way JM, Görgün CZ, Tong Q, Uysal KT, Brown KK, Harrington WW, Oliver WR Jr, Willson TM, Klierer SA, Hotamisligil GS (July 2001). "Adipose tissue resistin expression is severely suppressed in obesity and stimulated by peroxisome proliferator-activated receptor gamma agonists". *J. Biol. Chem.* 276 (28): 25651–3.