

Product Specification Sheet

Chicken Recombinant Purified Leptin binding domain

□ **Cat #** LEPBP16-R-50

□ **SIZE:** 50 ug

Obesity, a common nutritional disorder, is associated with diabetes, hypertension, hyperlipidemia, cancer and many other health related problems. At least five genes, Obese (**ob**), diabetes (**db**), fat (**fat**), agouti yellow (**Ay**), and tubby (**tub**) have been linked to obesity. Recently, **Ob genes** (mouse and human) have been cloned. Obese gene encodes an adipocyte-tissue derived secreted **Ob protein/Leptin** (167 amino acid, ~16 kDa) that controls body weight homeostasis. Exogenous administration of recombinant Ob protein can reduce food intake and body weight. However, Ob protein had no effect in db/db mice suggesting a defect in leptin signaling mechanism. Purified human Leptin (1-10 ug/gm of body weight; daily i.p injections for 14 days) has been shown to be biologically active in reducing body weight and food consumption in ob/ob and NZO mice (2).

The leptin receptor (LR), encoded by the db gene is a member of the class I cytokine receptor family. It has no intrinsic kinase activity and depends on cytoplasmic-associated Janus kinase 2 (JAK2) for signalling. The extracellular part of the receptor contains several structural domains. Amino-terminally, there is a cytokine receptor homology (CRH) module, termed CRH1, which is formed by two sub-domains that have a fibronectin type III (FNIII) fold (residues 62-178 and 235-328 in the human leptin receptor). Residues 329-427 (all numbering refers to the human leptin receptor) adopt an immunoglobulin (Ig)-like fold. The next two FNIII-like sub-domains (residues 428-535 and 536-635, respectively) form a second CRH module, called CRH2. Membrane-proximally, there are two more FNIII domains. CRH2 has been identified as the main high-affinity binding site for leptin on the LR (3).

The purified leptin-binding domain (LBD) (428-635) exhibited the predicted β structure, was capable of binding human, ovine, and chicken leptins, and formed a stable 1:1 complex with all mammalian leptins and Leptin triple and quadruple mutants (4). LBD blocked leptin-induced, but not interleukin-3-induced, proliferation of BAF/3 cells stably transfected with the long form of human leptin receptor. Two main residues, Phe-500, located in loop L3, and Tyr-441, located in L1, may play a critical role in leptin binding.

Source and Properties of Leptin

Recombinant chicken leptin binding domain (LBD, 208-aa) was cloned, expressed in E. Coli and purified (>95% by SDS-PAGE). Recombinant human LBD has a mol. Mass of ~24.5 kDa. The identity of protein has been confirmed by N-Terminal sequence analyses. Endotoxin level in the final preparation is less than 10 pg/ μ g of Leptin.

Purified leptin binding domain protein has <5% aggregates or dimers. The sequence of the first four N-terminal amino acids was determined and was found to be Ala-Thr-Pro-Val.

Biological Activity

Leptin Binding Domain recombinant human is evidenced by high affinity binding of mammalian leptins at 1:1 molar ratio.

Form & Storage

Recombinant Leptin binding domain is supplied in either isotonic PBS solution (1 mg/ml or lot sp conc stated on the vial) or Lyophilized in 0.004 mM NaHCO₃ with no preservative.

Reconstitute the lyophilized hLEP mutant in sterile 0.4% NaHCO₃ adjusted to pH 8-9, not less than 100 μ g/ml, which can then be further diluted to other aqueous solutions. It may be desirable to add protease-free BSA or human serum albumin (0.1%) and solution sterile filtered. It is stable at 4oC for 2-4 weeks and 3-6 months at -70oC. Avoid repeated freeze and thaw and store in suitable size aliquots.

General References:

- (1) Zhang, Y et al (1994) Nature 372, 425-431; (2) Pelleymounter MA et al (1995) Science 269, 540; (3) Fong Tm (1998) Mol. Pharmacol. 53, 234-240; Sandowski Y (2002) JBC 48, 46304-46309; Peelman F (2004) JBC 279, 41038-41046; Zabeau L (2004) Mol. Endocrinol. 18, 150-161; (4) Salomon G (2006) Protein Exp. Purif. 47, 128-136; Solomon G (2006) Ann NY Acad Sci. 1091, 531-539; Peters JH (2007) Endocrinol. in press.

This product is for In vitro research use only. NOT FOR DRUG USE.

Related material available from ADI

LEP11-R-1000	Mouse Recombinant Purified Leptin Protein
LEP14-R1000	Human Recombinant Purified Leptin Protein
LEP14-S	Anti-Human Leptin Protein antiserum # 2
LEP14-M	Monoclonal Anti-Human Leptin Protein
LEP14-R-1000	Rat Recombinant Purified Leptin Protein
LEP14-R-50	Ovine Recombinant Purified Leptin Protein
LEP15-R-50	Bovine Recombinant Purified Leptin Protein
LEP16-R-50	Porcine Recombinant Purified Leptin Protein
LEP17-R-50	Horse Recombinant Purified Leptin Protein
LEP18-R-50	Chicken Recombinant Purified Leptin Protein
LEP19-R-50	Dog Recombinant Purified Leptin Protein
LEP20-R-50	Rabbit Recombinant Purified Leptin Protein
LEP21-TR-100	Human Leptin Triple Antagonist Protein
LEP22-QR-100	Human Leptin Quadruple Antagonist Protein
LEP23-TR-100	Mouse Leptin Triple Antagonist Protein
LEP24-TR-100	Rat Leptin Triple Antagonist Protein
LEP25-TR-100	Ovine Leptin Triple Antagonist Protein
LEP26-QR-100	Ovine Leptin Quadruple Antagonist Protein
LEPBP11-S	Anti-Human Leptin binding Protein antiserum
LEPBP15-R-100	Human Leptin binding Protein
LEPBP16-R-100	Chicken Leptin binding Protein

Antibodies to Leptin (OBRa/b receptors), Leptin ELISA kits

Antibodies to Adiponectin (Acrp30), Resistin etc.

LEPBP15-R-50

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India Contact:

Life Technologies (India) Pvt. Ltd.

306, Aggarwal City Mall, Opposite M2K Pitampura, Delhi – 110034 (INDIA). Ph: +91-11-42208000, 42208111, 42208222, Mobile: +91-9810521400, Fax: +91-11-42208444

Email: customerservice@lifetechindia.com Website: www.lifetechindia.com