

DESCRIPTION

Source	Mouse myeloma cell line, NS0-derived human Leptin R protein			
	Human Leptin R (Thr20-Asp839) Accession # P48357.2	IIEGRDMD	Human IgG ₁ (Pro100-Lys330)	6-His tag
	N-terminus		C-terminus	
N-terminal Sequence Analysis	Thr20			
Structure / Form	Disulfide-linked homodimer			
Predicted Molecular Mass	121 kDa (monomer)			

SPECIFICATIONS

SDS-PAGE	155-175 kDa, under reducing conditions.
Activity	Measured by its ability to inhibit Leptin-dependent proliferation of BaF3 mouse pro-B cells transfected with human Leptin R. The ED ₅₀ for this effect is 0.02-0.12 µg/mL in the presence of 3 ng/mL Recombinant Human Leptin/OB (Catalog # 398-LP).
Endotoxin Level	<0.10 EU per 1 µg of the protein by the LAL method.
Purity	>97%, by SDS-PAGE under reducing conditions and visualized by silver stain.
Formulation	Lyophilized from a 0.2 µm filtered solution in MES, NaCl and CHAPS. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 200 µg/mL in sterile PBS.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	<p>Use a manual defrost freezer and avoid repeated freeze-thaw cycles.</p> <ul style="list-style-type: none"> • 12 months from date of receipt, -20 to -70 °C as supplied. • 1 month, 2 to 8 °C under sterile conditions after reconstitution. • 3 months, -20 to -70 °C under sterile conditions after reconstitution.

BACKGROUND

The Leptin receptor (Leptin R, gene name LEPR), also called OB R (obesity receptor), is a 150 kDa protein that is a member of the Class I cytokine receptor family. It mediates the activities of Leptin, a multi-functional hormone produced primarily by adipose tissues that plays roles in food intake, energy metabolism, angiogenesis, reproduction, hematopoiesis, bone metabolism, and immune function (1-3). The human Leptin R gene encodes 1165 amino acids (aa) including a signal peptide, an extracellular region with cytokine receptor homology (CRH), multiple fibronectin type III domains and a WSXWS motif, a transmembrane domain, and a cytoplasmic domain that supports JAK/STAT signaling (2, 3). Human Leptin R shares 76% aa sequence identity with mouse and rat Leptin R, and 83-86% with bovine, canine, equine and porcine Leptin R. Leptin R isoforms include a long form, OB RL or OB Rb (primary signaling form), and at least four shorter isoforms with truncated cytoplasmic domains, named OB Ra (ubiquitous), Rc, Rd, and Rf (2, 4). A soluble isoform, OB Re, is found in rodents but not humans (5). However, both humans and rodents produce soluble Leptin R due to release of soluble ectodomains by metalloproteinases such as ADAM10 (5, 6). OB Rb is highly expressed in the hypothalamus and mediates the anti-orexigenic effects of Leptin (1, 2). Mutations of ObRb have caused extreme obesity in humans, mice (db/db "diabetes"), and rats (Zucker fa/fa "fatty") (1, 7-9). Shorter isoforms of Leptin R exhibit limited signaling capability, but mediate endocytosis and degradation of Leptin and passage through the blood-brain barrier (4, 5, 10, 11). Soluble Leptin R is the primary Leptin-binding protein in blood, where it maintains a pool of available bioactive Leptin, delays Leptin clearance from circulation, and down-regulates blood-brain transmission of Leptin (5-7, 10). In humans, soluble Leptin R levels are inversely proportional to adiposity and are elevated in females versus males (12). Soluble Leptin R is also found up-regulated in patients with chronic heart failure, end-stage renal disease, and anorexia (13-15). It is expressed by tumor-initiating stem cells, and is proposed as a link between cancer and obesity (16).

References:

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