Recombinant Human TRANCE/TNFSF11/RANK L

Catalog Number: 6449-TEC

DESCRIPTION

Source	*E. coli*-derived human TRANCE/TNFSF11/RANK L protein Arg85-Asp245, with an N-terminal Met Accession # AAC51762
N-terminal Sequence Analysis	Met
Predicted Molecular Mass	18.3 kDa

SPECIFICATIONS

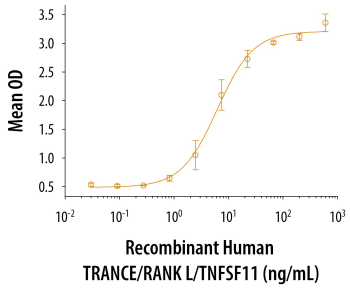
SDS-PAGE	19 kDa, reducing conditions
Activity	Measured by its ability to induce osteoclast differentiation of RAW 264.7 mouse monocyte/macrophage cells. The ED_{50} for this effect is 2-12 ng/mL
Endotoxin Level	<0.10 EU per 1 µg of the protein by the LAL method.
Purity	>90%, by SDS-PAGE under reducing conditions and visualized by silver stain.
Formulation	Lyophilized from a 0.2 µm filtered solution in MES and NaCl with BSA as a carrier protein. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 100 µg/mL in sterile PBS containing at least 0.1% human or bovine serum albumin.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	**Use a manual defrost freezer and avoid repeated freeze-thaw cycles.** • 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.

DATA

Bioactivity



Bioactivity of Human TRANCE/RANK L/TNFSF11
Recombinant Human TRANCE/RANK L/TNFSF11 (Catalog # 6449-TEC) induces osteoclast differentiation of the RAW264.7 mouse monocyte/macrophage cell line. The ED_{50} for this effect is 2-12 ng/mL.

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BACKGROUND

RANK L (receptor activator of NF-κB ligand), also called TRANCE (TNF-related activation-induced cytokines), OPGL (osteoprotegerin ligand), or ODF (osteoclast differentiation factor), is a 39-45 kDa type II transmembrane (TM) protein in the tumor necrosis factor family, designated TNFSF11 (1-5). RANK L, produced by osteoblasts and bone marrow stromal cells, is required for differentiation of osteoclasts and stimulates bone resorption (4, 6). It is also produced by activated T cells and augments dendritic cell stimulation; RANK $L^{-/-}$ mice lack lymph nodes and have impaired thymocyte development (1-3, 6). The human RANK L cDNA encodes 317 amino acids (aa), including a 47 aa cytoplasmic domain, a 21 aa TM region, and a 249 aa extracellular domain (ECD) with two potential N-linked glycosylation sites (note: Arg85-Asp245 of Accession # AAC51762 is identical to Arg157-Asp317 of SwissProt # O14788. This aa range contains the ECD trimerization and receptor-binding motifs, but not ECD proteolytic cleavage sites). Within the ECD, human RANK L shares 89%, 89%, 93% and 95% aa identity with mouse, rat, bovine and porcine RANK L, respectively. Mouse RANK L can stimulate human osteoclast differentiation (4). Like most TNF family members, RANK L can form trimers (1). Soluble 31, 25 and 24 kDa forms of RANK L can be created by usage of alternate start sites at aa 74 or 146, or proteolytic cleavage by osteoblast- or stromal cell-derived ADAM10 (after aa 139) or MMP14 (aa 146), or bone metastatic prostate tumor-derived MT1-MMP (aa 146) (5, 7, 8). Both TM and soluble extracellular RANK L act by engaging RANK receptors and are antagonized by the decoy receptor, OPG (osteoprotegrin) (2, 5). In resting cells, the majority of RANK L is stored in secretory lysosomes (9). In mammary epithelia, RANK L is upregulated by pregnancy hormones and is essential for the formation of a lactating mammary gland (10). In the brain, astrocyte RANK L mediates body temperature regulation (11). Pathologically, RANK L is thought to mediate post-menopausal osteoporosis, vascular calcification, progestin-induced breast cancer, cancer-induced bone disease, and osteopetrosis (in RANK L deficiencies) (12-16).

References:

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