Recombinant Human TNF RI/TNFRSF1A

Catalog Number: 636-R1/CF

DESCRIPTION

Source	*E. coli*-derived Ile22-Thr211, with an N-terminal Met Accession # P19438.1
N-terminal Sequence Analysis	Met
Predicted Molecular Mass	21 kDa

SPECIFICATIONS

Activity	Measured by its ability to inhibit the TNF-α mediated cytotoxicity in the L-929 mouse fibroblast cells in the presence of the metabolic inhibitor actinomycin D. Matthews, N. and M.L. Neale (1987) in Lymphokines and Interferons, A Practical Approach. Clemens, M.J. *et al.* (eds): IRL Press. 221. The ED_{50} for this effect, in the presence of 0.25 ng/mL of recombinant human TNF-α, is 0.045-0.09 µg/mL.
Endotoxin Level	<0.01 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 PBS. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 100 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	**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.

BACKGROUND

TNF receptor 1 (TNF RI; also called TNF R-p55/p60 and TNFRSF1A) is a 55 kDa type I transmembrane protein member of the TNF receptor superfamily, designated TNFRSF1A (1, 2). Human TNF RI is a 455 amino acid (aa) protein that contains a 21 aa signal sequence and 190 aa ECD with a PLAD (pre-ligand assembly domain) that mediates constitutive dimer/trimer formation, followed by four CRD (cysteine-rich domains), a 23 aa transmembrane domain, and a 221 aa cytoplasmic sequence that contains a neutral sphingomyelinase activation domain and a death domain (3, 4). The ECD of human TNF RI shows 70%, 69%, 80%, 80%, and 73% aa identity with mouse, rat, canine, feline and porcine TNF RI, respectively; and it shows 23% aa identity with the ECD of TNF RII. Both TNF RI and TNF RII (TNFRSF1B) are widely expressed and contain four TNF-α trimer-binding CRD in their ECD. However, TNF RI is thought to mediate most of the cellular effects of TNF-α (3). It is essential for proper development of lymph node germinal centers and Peyer's patches, and for combating intracellular pathogens such as Listeria (1, 2, 5). TNF RI is also a receptor for TNF-β/TNFSF1B (lymphotoxin-α) (6). TNF RI is stored in the Golgi and translocates to the cell surface following pro-inflammatory stimuli (7). TNF-α stabilizes TNF RI and induces its sequestering in lipid rafts, where it activates NFκB and is cleaved by ADAM-17/TACE (8, 9, 16). Release of the 28-34 kDa TNF RI ECD also occurs constitutively and in response to products of pathogens such as LPS, CpG DNA or S. aureus protein A (1, 10-12). Full-length TNF RI may also be released in exosome-like vesicles (13). Release helps to resolve inflammatory reactions, since it down-regulates cell surface TNF RI and provides soluble TNF RI to bind TNF-α (10, 14, 15). Exclusion from lipid rafts causes endocytosis of TNF RI complexes and induces apoptosis (1). Mutations of human TNF R1 can result in inflammatory episodes known as TRAPS (TNFR-associated periodic syndrome) (7).

References:

1. Pfeffer, K. (2003) Cytokine Growth Factor Rev. **14**:185.
2. Hehlgans, T. and K. Pfeffer (2005) Immunology **115**:1.
3. Chan, F.K. *et al.* (2000) Science **288**:2351.
4. Schall, T.J. *et al.* (1990) Cell **61**:361.
5. Peschon, J.J. *et al.* (1998) J. Immunol. **160**:943.
6. Banner, D.W *et al.* (1993) Cell **73**: 431.
7. Turner, M.D. *et al.* (2012) Biosci. Rep. **32**:105.
8. Legler, D.F. *et al.* (2003) Immunity **18**:655.
9. Tellier, E. *et al.* (2006) Exp. Cell Res. **312**:3969.
10. Xanthoulea, S. *et al.* (2004) J. Exp. Med. **200**:367.
11. Jin, L. *et al.* (2000) J. Immunol. **165**:5153.
12. Gomez, M.I. *et al.* (2006) J. Biol. Chem. **281**:20190.
13. Islam, A. *et al.* (2006) J. Biol. Chem. **281**:6860.
14. Garton, K.J. *et al.* (2006) J. Leukoc. Biol. **79**:1105.
15. McDermott, M.F. *et al.* (1999) Cell **97**:133.

bio-techne®
Global bio-techne.com info@bio-techne.com techsupport@bio-techne.com TEL +1 612 379 2956
USA TEL 800 343 7475 Canada TEL 855 668 8722 China TEL +86 (21) 52380373
Europe | Middle East | Africa TEL +44 (0)1235 529449