

# TNF $\alpha$ (hBA-158): sc-4564

## BACKGROUND

Tumor necrosis factor  $\beta$  (TNF $\beta$ ), also known as lymphotoxin, is a pleiotropic cytokine. TNF $\alpha$ , also known as cachectin, is a smaller cytokine that binds to the same receptors, producing a vast array of effects similar to those of TNF $\beta$ . TNF $\beta$  and TNF $\alpha$  share 30% amino acid homology and have similar biological activities. TNF $\beta$  is produced by activated lymphocytes, including CD4<sup>+</sup> T helper cell type 1 lymphocytes, CD8<sup>+</sup> lymphocytes and certain B lymphoblastoid cell lines. TNF $\alpha$  is produced by several different cell types, which include lymphocytes, neutrophils and macrophages. TNF $\alpha$  and TNF $\beta$  can modulate many immune and inflammatory functions, while having the ability to inhibit tumor growth. Target tumor cells must express TNF receptors 1 and 2 to be killed, with the p55 receptor mediating the cytotoxic response.

## REFERENCES

1. Nedwin, G.E., et al. 1985. Human lymphotoxin and tumor necrosis factor genes: structure, homology and chromosomal localization. *Nucleic Acids Res.* 13: 6361-6373.
2. Aggarwal, B.B., et al. 1985. Human tumor necrosis factor. Production, purification, and characterization. *J. Biol. Chem.* 260: 2345-2354.
3. Vilcek, J., et al. 1991. Tumor necrosis factor. New insights into the molecular mechanisms of its multiple actions. *J. Biol. Chem.* 266: 7313-7316.
4. Tartaglia, L.A., et al. 1993. Tumor necrosis factor's cytotoxic activity is signaled by the p55 TNF receptor. *Cell* 73: 213-216.
5. De Togni, P., et al. 1994. Abnormal development of peripheral lymphoid organs in mice deficient in lymphotoxin. *Science* 264: 703-707.
6. Qin, Z., et al. 1995. Tumor growth inhibition mediated by lymphotoxin: evidence of B lymphocyte involvement in the antitumor response. *Cancer Res.* 55: 4747-4751.
7. Sarin, A., et al. 1995. Cytotoxic effect of TNF and lymphotoxin on T lymphoblasts. *J. Immunol.* 155: 3716-3718.
8. Pandey, J.P., et al. 1999. TNF $\alpha$  and TNF $\beta$  gene polymorphisms in systemic sclerosis. *Hum. Immunol.* 60: 1128-1130.

## SOURCE

TNF $\alpha$  (hBA-158) is produced in *E. coli* as 44 kDa tagged biologically active protein corresponding to 158 amino acids of TNF $\alpha$  of human origin.

## PRODUCT

TNF $\alpha$  (hBA-158) is purified from bacterial lysates (> 98%); supplied as 50  $\mu$ g purified protein.

## BIOLOGICAL ACTIVITY

TNF $\alpha$  (hBA-158) is biologically active as determined by the cytotoxicity of murine L929 cells in the presence of Actinomycin D.

Expected ED<sub>50</sub>: < 0.05 ng/ml.

Specific Activity: Greater than 2 x 10<sup>7</sup> units/mg.

## RECONSTITUTION

In order to avoid freeze/thaw damaging of the active protein, dilute protein when first used to desired working concentration. Either a sterile filtered standard buffer (such as 50mM TRIS or 1X PBS) or water, can be used for the dilution. Store any thawed aliquot in refrigeration at 2° C to 8° C for up to four weeks, and any frozen aliquot at -20° C to -80° C for up to one year. It is recommended that frozen aliquots be given an amount of standard cryopreservative (such as Ethylene Glycol or Glycerol 5-20% v/v), and refrigerated samples be given an amount of carrier protein (such as heat inactivated FBS or BSA to 0.1% v/v) or non-ionic detergent (such as Triton X-100 or Tween 20 to 0.005% v/v), to aid stability during storage.

## SELECT PRODUCT CITATIONS

1. Taylor, R.T., et al. 2006. Human cytomegalovirus IE86 attenuates virus- and tumor necrosis factor  $\alpha$ -induced NF $\kappa$ B-dependent gene expression. *J. Virol.* 80: 10763-10771.
2. Baens, M., et al. 2006. The dark side of EGFP: defective polyubiquitination. *PLoS ONE* 1: e54.
3. Gui, J., et al. 2013. Dynamic change of TNF $\alpha$  in response to tumor necrosis factor  $\alpha$  in a TRAF2-dependent manner. *Hum. Cell* 26: 67-72.
4. Bennani-Baiti, B., et al. 2015. Inflammation modulates RLIP76/RALBP1 electrophile-glutathione conjugate transporter and housekeeping genes in human blood-brain barrier endothelial cells. *PLoS ONE* 10: e0139101.
5. Wang, M., et al. 2018. miR-214 mediates vascular inflammation and apoptosis via PTEN expression. *Mol. Med. Rep.* 18: 2229-2236.
6. Samaddar, S., et al. 2019. Polyphenols of marine red macroalgae *Symphocladia latiuscula* ameliorate diabetic peripheral neuropathy in experimental animals. *Heliyon* 5: e01781.

## STORAGE

Store desiccated at -20° C; stable for one year from the date of shipment.

## RESEARCH USE

For research use only, not for use in diagnostic procedures.

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.