Growth Factor Data Sheet

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Tumor necrosis factor (or TNF-α), also called cachectin, is produced by neutrophils, activated lymphocytes, macrophages, NK-cells, LAK-cells, astrocyte endothelial cells, smooth muscle cells and some transformed cells. TNF occurs as a secreted, soluble form and as a membrane-anchored form, both of which are biologically active. The naturally occurring form of TNF is glycosylated, but nonglycosylated recombinant TNF has comparable biological activity. The biologically active native form of TNF is reportedly a trimer. Human and murine TNF has approximately 79% homology at the amino acid level and there is cross-reactivity between the two species. Two types of receptors for TNF, p55 and p75, have been described and virtually all cell types studied show the presence of one or both of these receptor types. The clinical use of the potent antitumor activity of TNF has been limited by the pro-inflammatory side effects including fever, dose-limiting hypotension, hepatotoxicity, intravascular thrombosis and hemorrhage. Designing clinically applicable TNF mutants with low systemic toxicity has been an intense pharmacological interest. Human TNF variants, which bind to the murine TNF-R55 but not to the murine TNF-R75, exhibit retained anti-tumor activity and reduced systemic toxicity in mice compared with murine TNF, which binds to both murine TNF receptors. Based on these results, many TNF mutants that selectively bind to TNF-R55 have been designed. These mutants displayed cytotoxic activities on tumor cell lines *in vitro*, and exhibited lower systemic toxicity *in vivo*.

Catalog Number **Product Name**	**1130-012** **TNF-α (Variant), Human** Recombinant Human Tumor Necrosis Factor TNF-α, TNF-alpha Cachectin, Cachexin
Source	*Escherichia coli*
MW	~16.9 kDa (151 amino acids, compared with the wild-type, rHuTNF-α Variant has an amino acid sequence deletion from a.a. 1-7, and the following a.a. substitutes Arg8, Lys9, Arg10 and Phe157.)
Sequence	MRKRKPVAHV VANPQAEGQL QWLNRRANAL LANGVELRDN QLVVPSEGLY LIYSQVLFKG QGCPSTHVLL THTISRIAVS YQTKVNLLSA IKSPCQRETP EGAEAKPWYE PIYLGGVFQL EKGDRLSAEI NRPDYLDFAE SGQVYFGIIA F
Accession Number	P01375
Purity	>97% by SDS-PAGE and HPLC analyses
Biological Activity	Fully biologically active when compared to standard. The ED_{50} as determined by a cytotoxicity assay using murine L929 cells is less than 0.01 ng/ml, corresponding to a specific activity of $>1.0 \times 10^7$ IU/mg in the presence of actinomycin D.
Formulation	Sterile filtered white lyophilized powder. Purified and tested for use in cell culture.
Storage/Handling	This lyophilized preparation is stable at 2-8°C, but should be kept at -20°C for long term storage. The reconstituted sample can be apportioned into working aliquots and stored at -80 °C for up to 6 months. Avoid repeated freeze/thaw cycles.
Reconstitution	The sample should be briefly centrifuged prior to opening to bring the contents to the bottom. Reconstitute in a siliconized tube using PBS that contains a 0.1% BSA to a concentration of 0.1-1.0 mg/mL. Reconstituted solutions are stable for up to one week at 2-8°C. Stock solutions should be aliquoted and stored at -80°C. Further dilutions should be made in appropriate buffered solutions containing BSA or serum.