Miltenyi Biotec

Human TNF-α
premium grade

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1. Description

Products

Human TNF-α, premium grade.

Recombinant human tumor necrosis factor α.

Content in µg	Order no.
10	130-094-014

Biological activity

The ED_{50} is ≤0.025 ng/mL corresponding to an activity of ≥4×10^7 IU/mg. Lot-specific activities are stated in the Certificate of Analysis (www.miltenyibiotec.com/certificates).

▲ **Note:** The specific activity is determined by cytotoxicity assay using L929 cells provided by the German Collection of Microorganisms and Cell Cultures (DSMZ) in the presence of 1 µg/mL actinomycin D according to Baarsch *et al.*[1] The cytotoxicity assay was calibrated with the international standard for human TNF-α (NIBSC code 88/786) provided by the National Institute for Biological Standards and Control.

Primary structure

Single, non-glycosylated polypeptide chain (157 amino acid residues).

Molecular mass

17.4 kDa.

Source

Produced in *E. coli*.

Product format

Lyophilized from a filtered (0.2 µm) buffer solution.

Stabilizer

Mannitol and trehalose.

Purity

>97% as determined by SDS-PAGE analysis.

Endotoxin level

Low endotoxin (<1.0 EU/µg cytokine) as determined by Limulus Amebocyte Lysate (LAL) assay.

Storage

Lyophilized Human TNF-α, premium grade should be stored at –20 °C. The expiration date is indicated on the vial label. Upon reconstitution aliquots should be stored at –20 °C or below. Avoid repeated freeze-thaw cycles.

Reconstitution

It is recommended to reconstitute lyophilized Human TNF-α, premium grade with deionized sterile-filtered water to a final concentration of 0.1–1.0 mg/mL in a minimal volume of 100 µL. Further dilutions should be prepared with 0.1% bovine serum albumin (BSA) or human serum albumin (HSA) in phosphate-buffered saline.

1.1 Background information

Tumor necrosis factor α (TNF-α) is a proinflammatory cytokine mainly produced by activated monocytes and macrophages in response to infection, injury, and tumor burden. TNF-α production has also been reported for a variety of other cell types involved in inflammatory responses, including T cells, NK cells, and neutrophils as well as a number of non-immune cells, such as keratinocytes and astrocytes. TNF-α has a broad spectrum of biological activities. In addition to its central role in inflammation, TNF-α is noted for its cytotoxic and tumoricidal abilities either by necrosis or induction of apoptosis. Further functions include antiviral activity, growth modulation, and induction of cellular differentiation. Despite its various beneficial actions, TNF-α also plays a detrimental role in, for example, septic shock syndrome, tissue injury, inflammation, cachexia, and diabetes.

1.2 Applications

TNF-α can be used for a variety of applications, including:

- Induction of Mo-DC maturation.
- Cytotoxicity and cell proliferation assays.
- Assessment of apoptosis and viral protection.
- Investigation of TNF-α–induced signaling pathways.

Optimal concentration for a specific application should be determined by a dose-response experiment.

2. References

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4. Schweikert, E. M. *et al.* (2012) PON3 is upregulated in cancer tissues and protects against mitochondrial superoxide-mediated cell death. Cell Death Differ. 19 (9): 1549–1560.
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