

Human TGF-β1 (CHO) premium grade

Contents

1. Description
 - 1.1 Background information
 - 1.2 Applications
2. References

1. Description

Products	Human TGF-β1 (CHO), premium grade. Recombinant human transforming growth factor β1.										
	<table border="1"> <thead> <tr> <th>Content in µg</th><th>Order no.</th></tr> </thead> <tbody> <tr> <td>5</td><td>130-126-723</td></tr> <tr> <td>25</td><td>130-126-721</td></tr> <tr> <td>100</td><td>130-126-724</td></tr> <tr> <td>1000, liquid</td><td>130-126-722</td></tr> </tbody> </table>	Content in µg	Order no.	5	130-126-723	25	130-126-721	100	130-126-724	1000, liquid	130-126-722
Content in µg	Order no.										
5	130-126-723										
25	130-126-721										
100	130-126-724										
1000, liquid	130-126-722										
Biological activity	<p>The ED₅₀ is ≤0.2 ng/mL corresponding to an activity of ≥5×10⁶ U/mg. Lot-specific activities are stated in the Certificate of Analysis (www.miltenyibiotec.com/certificates).</p> <p>▲ Note: The ED₅₀ is determined by inhibition assay using IL-5 induced TF-1 cells according to Randall <i>et al.</i> The proliferation assay was calibrated with the standard for human TGF-β1 (NIBSC code 89/514) provided by the WHO/ National Institute for Biological Standards and Control.</p>										
Primary structure	Two identical, non-glycosylated disulfide-linked polypeptide chains (112 amino acid residues without propeptide LAP).										
Molecular mass	25.6 kDa (dimer).										
Source	Produced in CHO cells.										
Product format	<p>5 µg, 25 µg, 100 µg: Lyophilized from a filtered (0.2 µm) buffer solution.</p> <p>1000 µg: Liquid, filtered (0.2 µm) phosphate buffer solution without stabilizers.</p>										
Stabilizer	Mannitol and trehalose (5 µg, 25 µg, 100 µg).										
Purity	>97% as determined by SDS-PAGE analysis.										
Endotoxin level	Low endotoxin (<0.1 EU/µg cytokine) as determined by Limulus Amebocyte Lysate (LAL) assay.										
Storage	Lyophilized Human TGF-β1 (CHO), 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 TGF-β1 (CHO), premium grade with deionized sterile-filtered water to a final concentration of 0.1–1.0 mg/mL in a minimal volume of 250 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

Transforming growth factor β1 (TGF-β1) belongs to a family of homologous, disulfide-linked, homodimeric proteins. These highly pleiotropic cytokines inhibit proliferation of most cells but can promote the growth of mesenchymal cells and enhance extracellular matrix formation. The pivotal function of TGF-β1 in the immune system is to mediate immunosuppression and maintain tolerance by regulating lymphocyte proliferation, differentiation, and survival. In addition, TGF-β1 controls inflammatory responses through chemotactic attraction and activation of inflammatory cells and fibroblasts. TGF-β1 is produced by many cell types but is reported to be most abundant in mammalian platelets and bone. All three TGF-β members are synthesized as a homodimeric precursor of 390 residues, which is intracellularly processed by proteolysis into a 112 aa form. The resulting N-terminal latency associated peptide (LAP) remains non-covalently associated with the TGF-β dimer, and the complex binds to another protein called latent TGF-β-binding protein (LTBP), forming a larger complex called Large Latent Complex (LLC). The LLC is secreted into the extracellular matrix, and prevents the binding of TGF-β to its specific cell surface receptor. Several extracellular factors such as matrix metalloproteases, low pH, reactive oxygen species and thrombospondin-1 can induce release of the active mature TGF-β dimer from the inactive complex. This sophisticated mechanism of activation is important for a fine-tuning of TGF-β signaling. Human TGF-β1 is a recombinant homodimer corresponding to the fully mature form of TGF-β1 without LAP. The amino acid sequence of human TGF-β1 shares 99% identity with TGF-β1 from mouse and rat, therefore human TGF-β1 is commonly used also for mouse cell culture.

1.2 Applications

Human TGF-β1 (CHO) can be used for a variety of applications, including:

- *In vitro* differentiation of naive CD4⁺ T cells towards Th17 cells.
- *In vitro* generation of FoxP3⁺ inducible regulatory T cells (iTregs).
- Embryonic stem cell differentiation models, for example, for vasculogenesis and angiogenesis.
- *In vitro* chondrogenesis of mesenchymal progenitor cells and redifferentiation of expanded chondrocytes.

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

2. References

1. Randall, L. A. *et al.* (1993) A novel, sensitive bioassay for transforming growth factor β . *J. Immunol. Methods* 164: 61–67.

Refer to www.miltenyibiotec.com for all data sheets and protocols. Miltenyi Biotec provides technical support worldwide. Visit www.miltenyibiotec.com/local to find your nearest Miltenyi Biotec contact.

Legal notices

Limited product warranty

Miltenyi Biotec B.V. & Co. KG and/or its affiliate(s) warrant this product to be free from material defects in workmanship and materials and to conform substantially with Miltenyi Biotec's published specifications for the product at the time of order, under normal use and conditions in accordance with its applicable documentation, for a period beginning on the date of delivery of the product by Miltenyi Biotec or its authorized distributor and ending on the expiration date of the product's applicable shelf life stated on the product label, packaging or documentation (as applicable) or, in the absence thereof, ONE (1) YEAR from date of delivery ("Product Warranty"). Miltenyi Biotec's Product Warranty is provided subject to the warranty terms as set forth in Miltenyi Biotec's General Terms and Conditions for the Sale of Products and Services available on Miltenyi Biotec's website at www.miltenyibiotec.com, as in effect at the time of order ("Product Warranty"). Additional terms may apply. BY USE OF THIS PRODUCT, THE CUSTOMER AGREES TO BE BOUND BY THESE TERMS.

THE CUSTOMER IS SOLELY RESPONSIBLE FOR DETERMINING IF A PRODUCT IS SUITABLE FOR CUSTOMER'S PARTICULAR PURPOSE AND APPLICATION METHODS.

Technical information

The technical information, data, protocols, and other statements provided by Miltenyi Biotec in this document are based on information, tests, or experience which Miltenyi Biotec believes to be reliable, but the accuracy or completeness of such information is not guaranteed. Such technical information and data are intended for persons with knowledge and technical skills sufficient to assess and apply their own informed judgment to the information. Miltenyi Biotec shall not be liable for any technical or editorial errors or omissions contained herein.

All information and specifications are subject to change without prior notice. Please contact Miltenyi Biotec Technical Support or visit www.miltenyibiotec.com for the most up-to-date information on Miltenyi Biotec products.

Licenses

This product and/or its use may be covered by one or more pending or issued patents and/or may have certain limitations. Certain uses may be excluded by separate terms and conditions. Please contact your local Miltenyi Biotec representative or visit Miltenyi Biotec's website at www.miltenyibiotec.com for more information.

The purchase of this product conveys to the customer the non-transferable right to use the purchased amount of the product in research conducted by the customer (whether the customer is an academic or for-profit entity). This product may not be further sold. Additional terms and conditions (including the terms of a Limited Use Label License) may apply.

CUSTOMER'S USE OF THIS PRODUCT MAY REQUIRE ADDITIONAL LICENSES DEPENDING ON THE SPECIFIC APPLICATION. THE CUSTOMER IS SOLELY RESPONSIBLE FOR DETERMINING FOR ITSELF WHETHER IT HAS ALL APPROPRIATE LICENSES IN PLACE. Miltenyi Biotec provides no warranty that customer's use of this product does not and will not infringe intellectual property rights owned by a third party. BY USE OF THIS PRODUCT, THE CUSTOMER AGREES TO BE BOUND BY THESE TERMS.

Trademarks

The Miltenyi Biotec logo is a registered trademark or trademark of Miltenyi Biotec and/or its affiliates in various countries worldwide.

Copyright © 2020 Miltenyi Biotec and/or its affiliates. All rights reserved.