Recombinant Human TGF-β2

Catalog Number: 302-B2/CF

DESCRIPTION

Source	Mouse myeloma cell line, NS0-derived Ala303-Ser414 Accession # P61812
N-terminal Sequence Analysis	Ala303
Structure / Form	Disulfide-linked homodimer
Predicted Molecular Mass	12.7 kDa (monomer)

SPECIFICATIONS

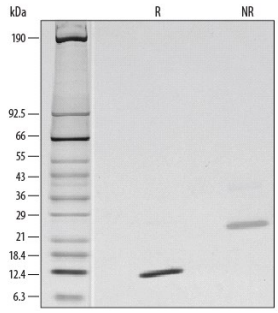
SDS-PAGE	12 kDa, reducing conditions 24 kDa, non-reducing condtions
Activity	Measured by its ability to inhibit the IL-4-dependent proliferation of HT−2 mouse T cells. Tsang, M. *et al*. (1995) Cytokine **7**:389. The ED_{50} for this effect is typically 0.025-0.25 ng/mL.
Endotoxin Level	<0.10 EU per 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 Acetonitrile and TFA. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute 2 µg vial at 5 µg/mL in sterile 4 mM HCl. Reconstitute 10 µg or larger vials at 100 µg/mL in sterile 4 mM HCl.
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.

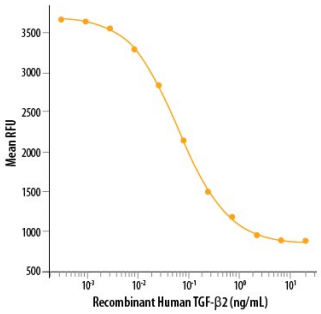
DATA

SDS-PAGE



1 µg/lane of Recombinant Human TGF-β2 was resolved with SDS-PAGE under reducing (R) and non-reducing (NR) conditions and visualized by silver staining, showing single bands at 12 kDa and 24 kDa, respectively.

Bioactivity



Recombinant Human TGF-β2 (Catalog # 302-B2/CF) inhibits Recombinant Mouse IL-4 (Catalog # 404-ML) induced cell proliferation in the HT-2 mouse T cell line. The ED_{50} for this effect is typically 0.025-0.25 ng/mL.

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BACKGROUND

TGF-β2 (transforming growth factor beta 2) is one of three closely related mammalian members of the large TGF-β superfamily that share a characteristic cysteine knot structure (1-7). TGF-β1, -2 and -3 are highly pleiotropic cytokines proposed to act as cellular switches that regulate processes such as immune function, proliferation and epithelial-mesenchymal transition (1-4). Each TGF-β isoform has some non-redundant functions; for TGF-β2, mice with targeted deletion show defects in development of cardiac, lung, craniofacial, limb, eye, ear and urogenital systems (2). Human TGF-β2 cDNA encodes a 414 amino acid (aa) precursor that contains a 19 aa signal peptide and a 395 aa proprotein (8). A furin-like convertase processes the proprotein to generate an N-terminal 232 aa latency-associated peptide (LAP) and a C-terminal 112 aa mature TGF- β2 (8, 9). Disulfide-linked homodimers of LAP and TGF-β2 remain non-covalently associated after secretion, forming the small latent TGF-β1 complex (8-10). Covalent linkage of LAP to one of three latent TGF-β binding proteins (LTBPs) creates a large latent complex that may interact with the extracellular matrix (9, 10). TGF-β is activated from latency by pathways that include actions of the protease plasmin, matrix metalloproteases, thrombospondin 1 and a subset of integrins (10). Mature human TGF-β2 shows 100% aa identity with porcine, canine, equine and bovine TGF-β2, and 97% aa identity with mouse and rat TGF-β2. It demonstrates cross-species activity (1). TGF-β2 signaling begins with binding to a complex of the accessory receptor betaglycan (also known as TGF-β RIII) and a type II ser/thr kinase receptor termed TGF-β RII. This receptor then phosphorylates and activates another ser/thr kinase receptor, TGF-β RI (also called activin receptor-like kinase (ALK) -5), or alternatively, ALK-1. The whole complex phosphorylates and activates Smad proteins that regulate transcription (3, 11, 12). Use of other signaling pathways that are Smad-independent allows for disparate actions observed in response to TGF-β in different contexts (11).

References:

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