Animal-Free™ Recombinant Human TGF-β3

Catalog Number: Qk054

DESCRIPTION

Source	*E. coli*-derived human TGF-beta 3 protein Accession # P10600.1
Predicted Molecular Mass	12.7 kDa (monomer), 25.4 kDa (dimer)

SPECIFICATIONS

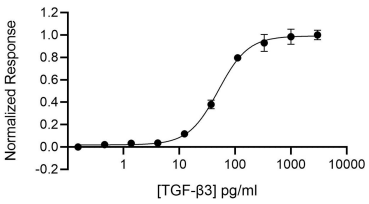
SDS-PAGE	Dimeric TGF- β3 protein only
Activity	No significant difference between EC_{50} of reference and test lots
Endotoxin Level	<0.10 EU per 1 µg of the protein by the LAL method.
Mass Spectrometry	Single species with expected mass
Mycoplasma	Negative when tested in both ribosomal RNA hybridization and luminescence assays
Formulation	Lyophilized from acetonitrile/TFA See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Resuspend in 10 mM HCl at >100 µg/mL, prepare single use aliquots, add carrier protein if desired.
Shipping	The product is shipped lyophilized at ambient temperture, on ice blocks or dry ice. Shipping at ambient temperture does not affect the bioactivity or stability of the protein. Upon reciept, store immediately at the conditions stated below.
Stability & Storage	BulkLotPrefix assignment required for Storage Info

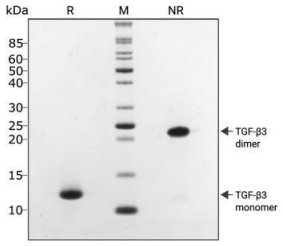
DATA

Bioactivity



Recombinant Human TGF-beta 3, Animal-Free Protein Bioactivity TGF-β3 activity is determined using a TGF-β3-responsive firefly luciferase reporter in HEK293T cells. Cells are treated in triplicate with a serial dilution of TGF-β3 for 6 hours. Firefly luciferase activity is measured and normalized to the control Renilla luciferase activity. EC_{50} = 50 pg/ml (1.97 pM).

SDS-PAGE



Recombinant Human TGF-beta 3, Animal-Free Protein SDS-PAGE TGF β3 migrates as a single band at 25 kDa in non-reducing (NR) conditions and 13 kDa upon reduction (R). No contaminating protein bands are visible. Purified recombinant protein (3 µg) was resolved using 15% w/v SDS-PAGE in reduced (+β-mercaptoethanol, R) and non-reduced (NR) conditions and stained with Coomassie Brilliant Blue R250.

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BACKGROUND

TGF-β3 (transforming growth factor-beta 3) is a member of a TGF-β superfamily subgroup that is defined by their structural and functional similarities (1-5). TGF-β3 and its closely related proteins, TGF-β1 and β2, act as cellular switches to regulate immune function, cell proliferation, and epithelial-mesenchymal transition (4, 6, 7). The non-redundant biological effects of TGF-β3 include involvement in palatogenesis, chondrogenesis, and pulmonary development (1, 2, 7-9). Human TGF-β3 cDNA encodes a 412 amino acid (aa) precursor that contains a 20 aa signal peptide and a 392 aa proprotein. The proprotein is processed by a furin-like convertase to generate a 220 aa latency-associated peptide (LAP) and a 112 aa mature TGF-β3 (10, 11). Mature human TGF-β3 shows 100%, 99%, and 98% aa identity with mouse/dog/horse, rat, and pig TGF-β3, respectively. TGF-β3 is secreted as a latent complex. This latent form of TGF-β3 is activated by integrins, thrombospondin-1, plasmin, and matrix metalloproteases (12, 13). It can also be activated by extreme pH and reactive oxygen species (1-5, 12). TGF-β3 binds with high affinity to TGF-β RII, a type II serine/threonine kinase receptor. This receptor then phosphorylates and activates type I serine/threonine kinase receptors, TGF-β RI or ALK-1, to modulate transcription through Smad phosphorylation (14-16). The divergent biological effects exerted by individual TGF-β isoforms is dependent upon the recruitment of co-receptors (TGF-β RIII and endoglin) and the subsequent initiation of Smad-dependent or -independent signaling pathways (15, 17, 18).

References:

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PRODUCT SPECIFIC NOTICES

The above product was manufactured, tested and released by R&D System's contract manufacturer, Qkine Ltd, at 1 Murdoch House, Cambridge, UK, CB5 8HW. The product is for research use only and not for the diagnostic or theraputic use.

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