

DESCRIPTION

Source Chinese Hamster Ovary cell line, CHO-derived
Gly311-Ser426
Accession # P08476

N-terminal Sequence Analysis Gly311

Structure / Form Disulfide-linked homodimer

Predicted Molecular Mass 13 kDa (monomer)

SPECIFICATIONS

SDS-PAGE 14 kDa, reducing conditions
24 kDa, non-reducing conditions

Activity Measured by its ability to induce hemoglobin expression in K562 human chronic myelogenous leukemia cells. Schwall, R.H. *et al.* (1991) *Method Enzymol.* **198**:340.
The ED₅₀ for this effect is 0.2-1.2 ng/mL.
The specific activity of Recombinant Human/Mouse/Rat Activin A is approximately 1 IU/μg, which is calibrated against human Activin A WHO International Standard (NIBSC code: 91/626).

Endotoxin Level <0.01 EU per 1 μg of the protein by the LAL method.

Purity >95%, by SDS-PAGE with silver staining.

Formulation Lyophilized from a 0.2 μm filtered solution in Acetonitrile and TFA with BSA as a carrier protein. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution Reconstitute at 100-500 μg/mL in sterile 4 mM HCl.

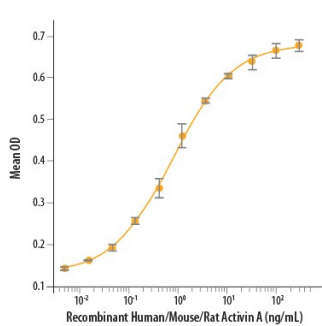
Shipping The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.

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.

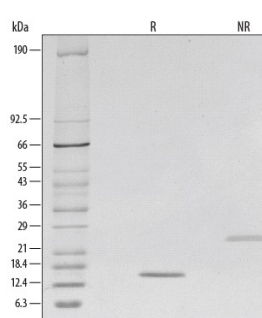
DATA

Bioactivity



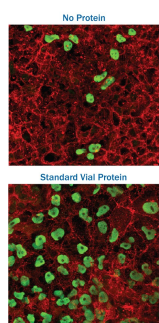
Recombinant Human/Mouse/Rat Activin A (Catalog # 338-AC) induces hemoglobin expression in K562 human chronic myelogenous leukemia cells. The ED₅₀ is 0.2-1.2 ng/mL.

SDS-PAGE



1 μg/lane of Recombinant Human/Mouse/Rat Activin A was resolved with SDS-PAGE under reducing (R) and non-reducing (NR) conditions and visualized by silver staining, showing single bands at 14 kDa and 24 kDa, respectively.

Bioactivity



Recombinant Human/Mouse/Rat Activin A Promotes the Differentiation of Pluripotent Stem Cells into Endoderm. BG01V human embryonic stem cells were differentiated into endoderm using media supplemented with Recombinant Human/Mouse/Rat Activin A (Catalog # 338-AC). Control cells were cultured in medium without recombinant Activin A. Differentiation into endoderm was confirmed by positive-staining for Claudin-6 (red) and Sox17 (green) using the Mouse Anti-Human Claudin-6 Monoclonal Antibody (Catalog # MAB3656) and the Goat Anti-Human Sox17 Polyclonal Antibody (Catalog # AF1924), respectively. BG01V human embryonic stem cells are licensed from ViaCyte, Inc.

BACKGROUND

Activin and Inhibin are members of the TGF- β superfamily of cytokines and are involved in a wide range of biological processes including tissue morphogenesis and repair, fibrosis, inflammation, neural development, hematopoiesis, reproductive system function, and carcinogenesis (1-7). Activin and Inhibin are produced as precursor proteins. Their amino terminal propeptides are proteolytically cleaved and facilitate formation of disulfide-linked dimers of the bioactive proteins (8, 9). Activins are nonglycosylated homodimers or heterodimers of various β subunits (β A, β B, β C, and β E in mammals), while Inhibins are heterodimers of a unique α subunit and one of the β subunits. Activin A is a widely expressed homodimer of two β A chains. The β A subunit can also heterodimerize with a β B or β C subunit to form Activin AB and Activin AC, respectively (10). The 14 kDa mature human β A chain shares 100% amino acid sequence identity with bovine, feline, mouse, porcine, and rat β A. Activin A exerts its biological activities by binding to the type 2 serine/threonine kinase Activin RIIA which then noncovalently associates with the type 1 serine/threonine kinase Activin RIB/ALK-4 (7, 11). Signaling through this receptor complex leads to Smad activation and regulation of activin-responsive gene transcription (7, 11). The bioactivity of Activin A is regulated by a variety of mechanisms (11). BAMBI, Betaglycan, and Cripto are cell-associated molecules that function as decoy receptors or limit the ability of Activin A to induce receptor complex assembly (12-14). The intracellular formation of Activin A can be prevented by the incorporation of the β A subunit into Activin AC or Inhibin A (3, 10). And the bioavailability of Activin A is restricted by its incorporation into inactive complexes with α 2-Macroglobulin, Follistatin, and FLRG (15, 16).

References:

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