Recombinant Human Angiopoietin-2

Catalog Number: 623-AN/CF

DESCRIPTION

Source	Mouse myeloma cell line, NS0-derived human Angiopoietin-2 protein Tyr19-Phe496, with a C-terminal 6-His tag Accession # O15123
N-terminal Sequence Analysis	Tyr19
Structure / Form	Oligomer
Predicted Molecular Mass	56 kDa

SPECIFICATIONS

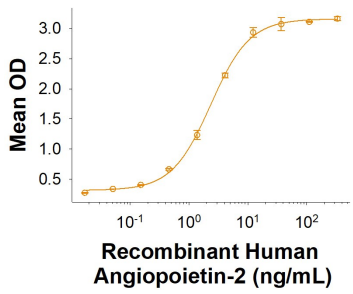
SDS-PAGE	66 kDa, reducing conditions
Activity	Measured by its ability to activate Tie-2 in C6 rat glial cells transfected with human Tie-2. 0.2 µg/mL of Recombinant Human Angiopoietin-2 significantly induces phosphorylation of human Tie-2. Measured by its binding ability in a functional ELISA. When Recombinant Human Tie-2 Fc Chimera (Catalog # 313-TI) is immobilized at 0.5 µg/mL (100 µL/well), Recombinant Human Angiopoietin-2 binds with an ED_{50} of 0.5-4 ng/mL.
Endotoxin Level	<0.10 EU per 1 µg of the protein by the LAL method.
Purity	>97%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.
Formulation	Lyophilized from a 0.2 µm filtered solution in MOPS, NaCl, CHAPS and PEG with Trehalose. *1 MG pack size is supplied as a 0.2 µm filtered solution in MOPS, NaCl, CHAPS and PEG. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 100 µg/mL in sterile PBS.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below. *1 MG pack size is shipped with dry ice or equivalent. Upon receipt, store it immediately at -70 °C.
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. • 3 months, -20 to -70 °C under sterile conditions after reconstitution. • 1 month, 2 to 8 °C under sterile conditions after reconstitution.

DATA

Binding Activity



Recombinant Human Angiopoietin-2 Protein Binding Activity When Recombinant Human Tie-2 Fc Chimera (Catalog # 313-TI) is immobilized at 0.5 µg/mL (100 µL/well), Recombinant Human Angiopoietin-2 (Catalog # 623-AN/FC) binds with an ED_{50} of 0.5-4 ng/mL.

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BACKGROUND

Angiopoietin-2 (Ang-2; also ANGPT2) is a secreted glycoprotein that plays a complex role in angiogenesis and inflammation (1, 2). Mature Ang-2 is 478 amino acids (aa) in length. It contains one coiled-coil domain (aa 166-248) that mediates multimerization, and a C-terminal fibrinogen-like domain (aa 275-495) that mediates receptor binding. Under reducing conditions, secreted monomeric Ang-2 is 65-66 kDa in size. Under non-reducing conditions, both natural and recombinant Ang-2 form 140 kDa dimers, 200 kDa trimers, and 250-300 kDa tetramers and pentamers (3-6). Alternate splicing generates a short isoform that lacks 52 amino acids (aa) preceding the coiled-coil domain (4). Mature human Ang-2 shares 86% aa sequence identity with mouse and rat Ang-2. Ang-2 is widely expressed during development, but it is restricted postnatally to highly angiogenic tissues such as the placenta, ovaries, and uterus (3). It is particularly abundant in vascular endothelial cells (EC) where it is stored in intracellular Weibel-Palade bodies (1, 3, 7). Both Ang-2 and the related Angiopoietin-1 (Ang-1) are ligands for the receptor tyrosine kinase Tie-2 (2). While Ang-1 is a potent Tie-2 agonist, Ang-2 may act as either a Tie-2 antagonist or agonist, depending upon its state of multimerization. The higher the order of oligomer, the more effective Ang-2 becomes as a Tie-2 agonist (3, 8-11). The short isoform appears to block the binding of either Ang-1 or full-length Ang-2 to Tie-2 (4). Ang-2 functions as a pro-angiogenic factor, although it can also induce EC death and vessel regression (12, 13). Upon its release from quiescent EC, it regulates vascular remodeling by promoting EC survival, proliferation, and migration and destabilizing the interaction between EC and perivascular cells (8, 13, 14). Ang-2 is required for postnatal vascular remodeling, and it cooperates with Ang-1 during lymphatic vessel development (7, 15). It mediates the up-regulation of ICAM-1 and VCAM-1 on EC, which facilitates the adhesion of leukocytes during inflammation (16). Ang-2 is up-regulated in both the endothelium and tumor cells of several cancers as well as in ischemic tissue (17-20). Its direct interaction with Integrins promotes tumor cell invasion (21, 22). Ang-2 also promotes the neuronal differentiation and migration of subventricular zone progenitor cells (20).

References:

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