Recombinant Mouse Semaphorin 3A Fc Chimera

Catalog Number: 5926-S3/CF

DESCRIPTION

Source

Chinese Hamster Ovary cell line, CHO-derived

Mouse Semaphorin 3A (Asn21-Lys747: Arg552Ala, Arg554Ala, Arg555Ala, Arg618Ala, Lys619Ala, Lys642Ala, Lys643Ala) Accession # O08665	IEGRMDP	Mouse IgG_{2A} (Glu98-Lys330)
N-terminus		C-terminus

N-terminal Sequence Analysis	Asn21
Structure / Form	Disulfide-linked homodimer
Predicted Molecular Mass	110.1 kDa (monomer)

SPECIFICATIONS

SDS-PAGE	115-120 kDa, reducing conditions
Activity	Measured by its ability to cause collapse of chick embryonic dorsal root ganglia (DRG) neuron growth cones. 20-60 ng/mL of Recombinant Mouse Semaphorin 3A Fc Chimera causes >50% growth cone collapse in the presence 10 ng/mL Recombinant Human β-NGF (Catalog # 256-GF).
Endotoxin Level	<1.0 EU per 1 µg of the protein by the LAL method.
Purity	>90%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 100 µg/mL in PBS.
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. ● 3 months, -20 to -70 °C under sterile conditions after reconstitution.

BACKGROUND

Semaphorin 3A (Sema3A; previously sem D, sema III or collapsin) is one of six Class 3 secreted semaphorins which share ~40-50% amino acid (aa) identity (1-3). Class 3 semaphorins are potent chemorepellents that function in axon and/or vascular guidance during development (2, 3). The 772 aa mouse Sema3C contains a 20 aa signal sequence, an ~500 aa N-terminal Sema domain that forms a β-propeller structure similar to that found in integrin molecules, a PSI domain, a furin-type cleavage site, an Ig-like domain, and a C-terminal basic domain (3, 4). Covalent dimerization plus cleavage at the C-terminus are required for activity of class 3 semaphorins (5, 6). The 95 kDa mature mouse Sema3A shares at least 95% aa identity with human, rat, equine and canine Sema3A, and 90% and 86% aa identity with chick and zebrafish Sema3A, respectively. Type 3 semaphorins transduce signals through transmembrane plexins, either directly or by binding associated neuropilin receptors (3). Sema3A signaling is transduced by plexin A1-4, indirectly via neuropilin-1 (3). Sema3A activity is mediated by small GTPases that influence actin rearrangement and integrin activity (7-9). It is important in developmental organization of central and peripheral nerves, including those in heart, lung, kidneys, bones, teeth, and visual and olfactory systems (1, 2, 10, 11). Gradients of Sema3A repel axons, but attract dendrites (11, 12). Sema3A affect vasculogenesis by inhibiting integrin function and, with Sema3F, promoting apoptosis of endothelial cells (3, 9, 12). It is thought to suppress cancer-related angiogenesis (3). In the immune system, Sema3A influences T cell proliferation, migration, response to activation, and interactions with dendritic cells (7, 13). It negatively regulates platelet activation (14). Expression of Sema3A in relevant parts of the nervous system may be increased in Alzheimer's disease, multiple sclerosis, ischemia and schizophrenia (2).

References:

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