

Product Information

Myelin Associated Glycoprotein/Fc Chimera

Rat, Recombinant

Expressed in mouse NSO cells

Product Number **M 5063**

Storage Temperature -20°C

Synonyms: MAG

Product Description

Myelin Associated Glycoprotein (MAG)/Fc chimera was prepared from a cDNA sequence encoding the extracellular domain of rat MAG¹ that was fused by means of a polypeptide linker to the carboxyl-terminal Fc region of human IgG₁. The chimeric protein was expressed in NSO mouse myeloma cells. Mature recombinant rat MAG/Fc chimera is a disulfide-linked homodimer. Based on amino-terminal sequencing the amino terminus is Gly²⁰. Reduced rat MAG/Fc chimera monomer has a calculated molecular mass of approximately 81 kDa. As a result of glycosylation, the recombinant protein migrates as a 120 kDa protein in SDS-PAGE.

MAG is a type I transmembrane glycoprotein containing five Ig-like domains in its extracellular domain. It is an adhesion molecule belonging to the immunoglobulin superfamily, that includes among its members MAG, CD22, CD33, Schwann cell myelin protein, and sialoadhesin. These adhesion molecules bind specifically to cell-surface glycan containing sialic acid residues that define the I-type sialyl lectin subgroup. Thus, they are also called the sialoadhesin family. Sialoadhesins mediate diverse biological processes through recognition of specific sialylated glycans on the cell surface.

MAG, a minor component of myelin in the central and peripheral nervous system, has been implicated in the formation and maintenance of myelin.² MAG is expressed on myelinating oligodendrocytes and Schwann cells, and preferentially recognize a 2,3-linked sialic acid on O-linked glycans and gangliosides. MAG exists as two isoforms that differ in the sequence and length of the cytoplasmic tail. The large isoform (71 kDa) and small isoform (67 kDa) arise from alternative splicing of mRNAs.

Although MAG may encounter haemopoietic cells and lymphocytes under pathologic conditions, it would normally interact with neuronal cells. It has been shown that MAG promotes axonal growth from neonatal dorsal root ganglion (DRG) neurons and embryonic spinal neurons, but is a potent inhibitor of axonal re-growth from adult DRG and postnatal cerebellar neurons. MAG plays an important role in the interaction between axons and myelin. A soluble form of MAG containing the extracellular domain is released from myelin in large quantities and identified in normal human tissues and in tissues from patients with neurological disorders. This soluble MAG may contribute to the lack of neuronal regeneration after injury.³⁻⁶

Reagent

Recombinant mouse MAG/Fc chimera is lyophilized from a 0.2 μm -filtered solution in phosphate buffered saline (PBS).

Precautions and Disclaimer

For laboratory use only. Not for drug, household or other uses. Please consult the Material Data Safety Sheet for handling recommendations before working with this material.

Preparation Instructions

A stock solution may be prepared with PBS to a concentration of no less than 100 $\mu\text{g/mL}$.

Storage/Stability

Lyophilized recombinant rat MAG/ Fc chimera is stable for at least six months at -20°C . Upon reconstitution, store in single-use aliquots under sterile conditions at $2-8^{\circ}\text{C}$ for one month or at -20°C for three months. Avoid repeated freeze-thaw cycles. Do not store in a frost-free freezer.

Product Profile

Purity: > 95%, as determined by SDS-PAGE visualized by silver staining.

Endotoxin: < 1.0 EU (endotoxin units) per 1 µg of protein as determined by the Limulus amoebocyte lysate (LAL) method.

The activity of recombinant rat MAG/Fc chimera is measured by its ability to inhibit neurite outgrowth of cultured embryonic chick dorsal root ganglia neurons. Immobilized recombinant rat MAG/Fc on nitrocellulose coated microplate (at a 3 µl droplet containing 400 ng) is sufficient to significantly inhibit neurite outgrowth.

References

1. Salzer, J.L., *et al.*, The amino acid sequences of the myelin-associated glycoproteins: homology to the immunoglobulin gene superfamily. *J. Cell. Biol.*, **104**, 957-965 (1987).
2. Schachner, M., and Bartsch, U., Multiple functions of the myelin-associated glycoprotein MAG (siglec-4a) in formation and maintenance of myelin. *Glia*, **29**, 154-65 (2000).
3. Kelm, S., *et al.*, Sialoadhesin, myelin-associated glycoprotein and CD22 define a new family of sialic acid-dependent adhesion molecules of the immunoglobulin superfamily. *Curr. Biol.*, **4**, 965-972 (1994).
4. McKerracher, L., *et al.*, Identification of myelin-associated glycoprotein as a major myelin-derived inhibitor of neurite growth. 1994, *Neuron*, **13**, 805-811 (1994).
5. Tang, S., *et al.*, Soluble myelin-associated glycoprotein (MAG) found in vivo inhibits axonal regeneration. *Mol. Cell. Neurosci.*, **9**, 333-346 (1997).
6. Cai, D., *et al.*, Prior exposure to neurotrophins blocks inhibition of axonal regeneration by MAG and myelin via a cAMP-dependent mechanism. *Neuron*, **22**, 89-101 (1999).

KAA/RBG 12/04

Sigma brand products are sold through Sigma-Aldrich, Inc.

Sigma-Aldrich, Inc. warrants that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see reverse side of the invoice or packing slip.