



Product Information

Anti-Endothelial Cell Differentiation Gene 1, (EDG-1) C-TERMINAL

Developed in Rabbit, Fractionated Antisera

Product Number **E 7403**

Product Description

Anti-EDG-1 (Endothelial Cell Differentiation Gene-1) C-terminal antibody is developed in rabbit using a KLH (Keyhole Limpet Hemocyanin)-tagged synthetic peptide derived from the C-terminal region of human EDG-1 receptor protein as immunogen. The serum is purified by ammonium sulfate precipitation and then dialyzed in order to prevent exposure to extreme pH changes.

Anti-EDG-1 recognizes human natural and recombinant EDG-1 (44 kDa) receptor. It has been used in immunoblotting applications.

The lysosphingolipid sphingosine-1-phosphate (S1P) and the structurally related lipid lysophosphatidic acid (LPA) elicit a wide spectrum of biological responses in a variety of cell types, including calcium mobilization, mitogenesis, cell-shape changes, migration and contraction. S1P and LPA have been implicated in a variety of pathophysiological conditions, including blood clotting, subarachnoid hemorrhage, inflammation and colitis. S1P mediates some of its activities intracellularly by acting as a second messenger, while LPA may mediate mitogenesis and platelet aggregation via an EDG receptor-independent mechanism. LPA is also an anti-apoptotic factor.

Recent studies have identified the existence of the G protein-coupled heptahelical receptor subfamily (Endothelial Cell Differentiation Genes) for the biologically active lysophospholipids, which consists of two receptor subgroups specific for S1P and LPA, respectively. The S1P receptor subgroup comprises five members: EDG-1, -3, -5/AGR16, -6, and -8, with considerable amino acid similarity among them. The LPA subgroup includes EDG-2, -4, and -7.^{1,2} EDG receptors are developmentally regulated and differ in their tissue expression. The amino acid sequence similarity between EDG receptors reflects the similarity of S1P and LPA.

EDG-1 is a 381 amino acid protein (42-43 kDa) expressed ubiquitously in tissues. It has been demonstrated that EDG-1 is a heterotrimeric guanine nucleotide-binding protein-coupled receptor for S1P. EDG-1 binds S1P with high affinity and specificity. S1P acts on EDG-1 and EDG-3 subtypes to induce cell survival, morphogenesis and vascular maturation. Deletion of EDG-1 or inhibition of sphingosine kinase suppressed chemotaxis toward PDGF. These data indicate an important role of S1P in the formation of the cardiovascular system, cell motility and chemotaxis, as well as receptor cross-communication in which activation of a G protein-coupled receptor by a receptor tyrosine kinase is critical for cell motility. Overexpression of EDG-1 induced exaggerated cell-cell aggregation, enhanced expression of cathedrins and formation of well-developed adherens junctions in a manner dependent on S1P and the small guanine nucleotide-binding protein Rho.³⁻⁵

The availability of antibodies to EDG receptors will help to study biological implications of LPA and S1P signaling.

Reagent

Anti-EDG-1 is supplied as approximately 100 µg of antibody in 100 µl of sterile phosphate buffered saline, pH 7.3, with 0.08% sodium azide as a preservative.

Precautions and Disclaimer

Due to the sodium azide content, a material safety data sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazards and safe handling practices.

Storage/Stability

Store at -20 °C. For extended storage, freeze in working aliquots. Avoid repeated freezing and thawing to prevent denaturing of the antibody. Do not store in a frost-free freezer. The antibody is stable for at least 12 months when stored appropriately.

Product Profile

A recommended working concentration of 5 to 10 µg/ml is determined by immunoblotting using RH7777 cells transfected with full-length EDG-1 receptor.

Preincubation of the antibody with the immunizing peptide blocks EDG-1 detection, whereas preincubation of Anti-EDG-1 with a non-specific peptide has no effect on detection. For the detection of natural EDG-1 receptor in tissues and cells, use higher concentrations of the antibody.

Note: In order to obtain best results in different techniques and preparations we recommend determining optimal working concentration by titration test.

References

1. Kupperman, E., et al., A sphingosine-1-phosphate receptor regulates cell migration during vertebrate heart development. *Nature*, **406**, 192-195 (2000).
2. Takuwa, Y., et al., Subtype-specific, differential activities of the EDG family receptor sphingosine-1-phosphate, a novel lysophospholipid mediator. *Mol. Cell Endocrinol.*, **177**, 3-11 (2001).
3. An, S., et al., Sphingosine 1-phosphate-induced cell proliferation, survival, and related signaling events mediated by G protein-coupled receptors Edg3 and Edg5. *J. Biol. Chem.*, **275**, 288-296 (2000).
4. Lee, M.J., et al., Sphingosine-1-phosphate as a ligand for the G protein-coupled receptor EDG-1. *Science*, **279**, 1552-1555 (1998).
5. Hobson, J.P., et al., Role of the sphingosine-1-phosphate receptor EDG-1 in PDGF-induced cell motility. *Science*, **291**, 1800-1803 (2001).

AH/JK 12/2003

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.