

Product Information

Anti-Endothelial Cell Protein C Receptor antibody, Rat monoclonal

clone RCR-379, purified from hybridoma cell culture

Product Number **E6405**

Product Description

Anti-Endothelial Cell Protein C Receptor (EPCR) (rat IgG2a isotype) is derived from the RCR-379 hybridoma produced by the fusion of mouse SP2/0 myeloma cells and lymphatic cells isolated from the superficial inguinal lymph nodes from Wister rats immunized with human EPCR-positive RE-1 cells.¹ The antibody is purified from culture supernatant of hybridoma cells, grown in a bioreactor.

Anti-Endothelial Cell Protein C Receptor (EPCR) recognizes human EPCR (49 kDa). The antibody may be used in flow cytometry (FACS analysis)¹ and in immunohistochemistry using frozen sections.

Blood coagulation depends on a series of sequential proteolytic processes, leading to the generation of new serine proteases. Several natural anticoagulant mechanisms are balancing the clotting system. One of them is the protein C anticoagulant pathway. In this pathway, thrombin binds to the endothelial cell receptor thrombomodulin. This complex activates protein C to generate the anticoagulant enzyme activated protein C (APC) that when complexed to protein S inhibits coagulation by inactivating two critical regulatory proteins: factor Va and VIIIa.³ Protein C activation by the thrombin/ thrombomodulin complex is a relatively low-affinity reaction. However, it was found that protein C and APC bind to culture endothelial cells with a relatively high affinity. The high affinity binding of both ligands ($K_d = 30\text{nM}$) is mediated by the endothelial cell protein C receptor (EPCR).

EPCR is a type 1 transmembrane glycoprotein containing two domains in the extra cellular region that are homologous to the $\alpha 1$ and $\alpha 2$ domains of CD1/MHC class 1 molecules.⁴ The mature human EPCR protein contains 211 amino acids. The protein migrates as a 49 kDa protein due to its carbohydrates chains.¹ The protein is expressed in endothelial cells present in various types of vessels including arterial heart, lung, and in the vena cava inferior. The EPCR is also expressed in small vessels such as capillaries of the alveolar wall in the lung.¹

The high-affinity binding of protein C to EPCR is a critical step for activation. Upon binding, the structure of protein

C is modulated to enable rapid conversion to the active form. This enhances the activation rate by at least 5-fold.^{3,4} The EPCR protein appears to perform other functions, as well. It binds proteinase 3. The complex then binds to MAC-1 on activated neutrophils and inhibits their adhesion to activated endothelium. Another property of EPCR is that it can translocate from the membrane to the nucleus.⁵

Antibodies, which react specifically with the EPCR protein, are an essential tool for both monitoring the expression of the protein in various blood vessels and for exploring the physiological effects of protein C and APC binding on the mechanisms of blood clotting in homeostasis and various thrombotic disorders.

Reagent

Anti-Endothelial Cell Protein C Receptor (EPCR) is supplied as a solution in 0.01 M phosphate buffered saline, pH 7.4, containing 15 mM sodium azide.

Antibody Concentration: Approx. 2 mg/ml.

Precautions and Disclaimer

For R&D use only. Not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability

For continuous use, store at 2-8 °C for up to one month. For prolonged storage, freeze in working aliquots at -20 °C. Repeated freezing and thawing is not recommended. Storage in frost-free freezers is also not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilutions should be discarded if not used within 12 hours.

Product Profile

A working concentration of 5-20 µg/ml is recommended by FACS analysis using HUVEC cells.

Note: In order to obtain the best results using various techniques and preparations, we recommend determining the optimal working concentrations by titration.

References

1. Ye, X., et al., Biochem. Biophys. Res. Commun., **259**, 671-677 (1999).
2. Stearns-Kurosawa, D.J., et al., Proc. Natl. Acad. Sci. USA, **93**, 10212-10216 (1996).
3. Fukudome, K., et al., J. Exp. Med., **187**, 1029-1035 (1998).
4. Oganeshyn, V., et al., J. Biol. Chem., **277**, 24851-24854 (2002).

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