

Recombinant RPTPgamma (801-1147) Active Enzyme

BACKGROUND

RPTP gamma, also known as Receptor-type tyrosine-protein phosphatase gamma, R-PTP-gamma or PTPRG is a protein tyrosine phosphatase (PTP) is a candidate tumor suppressor gene since it is located on human chromosome 3p14.2-p21, a region frequently deleted in certain types of renal and lung carcinomas. In situ hybridization analysis reveals that RPTP gamma mRNA is expressed in specific regions of the brain and that the localization of RPTP gamma changes during brain development. RPTP gamma is composed of a putative extracellular domain, a single transmembrane domain, and a cytoplasmic portion with two tandem catalytic tyrosine phosphatase domains. The extracellular domain contains a stretch of 266 amino acids with striking homology to the zinc-containing enzyme carbonic anhydrase (CAH), indicating that RPTP gamma and RPTP beta (HPTP zeta) represent a subfamily of receptor tyrosine phosphatases. RPTP gamma may have a function other than catalysis of hydration of metabolic CO₂.

ORDERING INFORMATION

CATALOG NUMBER
X1666E

SIZE
10 µg

STORAGE CUSTOMER
Product should be stored at -20°C.
Aliquot to avoid freeze/thaw cycles

STABILITY
Products are stable for one year
from purchase when stored properly

SHIP CONDITIONS
Ship on gel ice, freeze upon arrival

FORMULATION
Provided in 25 mM Tris-HCl, 75 mM
NaCl, pH 8.0, 0.05% Tween, 5 mM DTT
and 50% glycerol

CONCENTRATION
1 mg/ml

SOURCE
Recombinant enzyme produced in E.
coli

ACTIVITY

4 nmole/min/µg of enzyme; Determined using pNPP; Reaction conditions: 50 µM pNPP, 10 min incubation at 30°C, 0.3 µg enzyme.

PURITY

>90% pure as determined by Coomassie-stained SDS gel

ASSAY METHODS

MATERIALS

1. Assay Buffer: 50 mM HEPES, pH 7.4, 100 mM NaCl, 2 mM EDTA, 3 mM DTT
2. Stop solution: 2M K₂CO₃
3. 190 mM pNPP
4. Microtiter plate
5. Microtiter plate reader capable of measurements at 405 nm
6. Water bath or incubator at 30°C

PROCEDURE

1. Prepare reaction mixture:
 - a. 73 µl assay buffer
 - b. 26 µl pNPP (Final concentration of pNPP is 50 mM)
 - c. 1 µl of RPTPgamma
2. Mix well and start reaction at 30°C in water bath and incubate for 10 min.
3. Add 100 µl per well of 2 M K₂CO₃ to stop the reaction.
4. Read absorbance at 405 nm using a microtiter plate reader.

For research use only. Not for use in human diagnostics or therapeutics.

REFERENCES

- 1: Yuki T, Ishihara S, Rumi M, Ortega-Cava Cesar F, Kadowaki Y, Kazumori H, Yuki M, Wada T, Miyaoka Y, Yoshino N, Kinoshita Y. Expression of midkine and receptor-like protein tyrosine phosphatase (RPTP)-beta genes in the rat stomach and the influence of rebamipide. *Aliment Pharmacol Ther.* 2003 Jul;18 Suppl 1:106–12.
- 2: Robles Y, Vivas-Mejia PE, Ortiz-Zuazaga HG, Felix J, Ramos X, Pena de Ortiz S. Hippocampal gene expression profiling in spatial discrimination learning. *Neurobiol Learn Mem.* 2003 Jul;80(1):80–95.
- 3: Hirayama T. Protein tyrosine phosphatase beta, a receptor for *Helicobacter pylori* vacA toxin. *Keio J Med.* 2002 Dec;51 Suppl 2:20–3. Review.
- 4: Shintani T, Maeda N, Noda M. Receptor-like protein tyrosine phosphatase gamma (RPTPgamma), but not PTPzeta/RPTPbeta, inhibits nerve-growth-factor-induced neurite outgrowth in PC12D cells. *Dev Neurosci.* 2001;23(1):55–69.
- 5: Chilton JK, Stoker AW. Expression of receptor protein tyrosine phosphatases in embryonic chick spinal cord. *Mol Cell Neurosci.* 2000 Oct;16(4):470–80.
- 6: Barnea G., Silvennoinen O., Shaanan B., Honegger A.M., Canoll P.D., D'Eustachio P., Morse B., Levy J.B., Laforgia S., Huebner K., Musacchio J.M., Sap J., Schlessinger J.; "Identification of a carbonic anhydrase-like domain in the extracellular region of RPTP gamma defines a new subfamily of receptor tyrosine phosphatases."; *Mol. Cell. Biol.* 13:1497–1506(1993).
- 7: Kastury K., Ohta M., Lasota J., Moir D., Dorman T., Laforgia S., Druck T., Huebner K.; "Structure of the human receptor tyrosine phosphatase gamma gene (PTPRG) and relation to the familial RCC t(3;8) chromosome translocation."; *Genomics* 32:225–235(1996).
- 8: Krueger N.X., Streuli M., Saito H.; "Structural diversity and evolution of human receptor-like protein tyrosine phosphatases.";
- 9: Kaplan R., Morse B., Huebner K., Croce C., Howk R., Ravera M., Ricca G., Jaye M., Schlessinger J.; "Cloning of three human tyrosine phosphatases reveals a multigene family of receptor-linked protein-tyrosine-phosphatases expressed in brain."; *Proc. Natl. Acad. Sci. U.S.A.* 87:7000–7004(1990).

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