Recombinant Human PRL-1/PTP4A1

Catalog Number: 8490-PT

DESCRIPTION

Source	*E. coli*-derived Ala2-Gln173, with an N-terminal Met and 7-His tag Accession # Q93096
N-terminal Sequence Analysis	Met
Predicted Molecular Mass	21 kDa

SPECIFICATIONS

SDS-PAGE	24 kDa, reducing conditions
Activity	Measured by its ability to cleave a substrate, p-Nitrophenyl phosphate (pNPP). The specific activity is >0.35 pmol/min/µg, as measured under the described conditions.
Endotoxin Level	<1.0 EU per 1 µg of the protein by the LAL method.
Purity	>80%, by SDS-PAGE under reducing conditions and visualized by Colloidal Coomassie® Blue stain at 5 µg per lane.
Formulation	Supplied as a 0.2 µm filtered solution in HEPES, NaCl, Betamercaptoethanol and Brij-35. See Certificate of Analysis for details.

Activity Assay Protocol

Materials

- Assay Buffer: 50 mM HEPES, 10 mM DTT, pH 7.5
- Recombinant Human PRL-1/PTP4A1 (rhPTP4A1) (Catalog # 8490-PT)
- Substrate: p-Nitrophenyl phosphate (Sigma, Catalog # N2765), 10 mM stock in deionized water
- NaOH, 0.2 M in deionized water
- 96-well Clear Plate (Catalog # DY990)
- Plate Reader (Model: SpectraMax Plus by Molecular Devices) or equivalent

Assay

1. Dilute rhPTP4A1 to 40 µg/mL in Assay buffer.
2. Dilute Substrate to 5 mM in Assay buffer.
3. Prepare reaction mixtures by combining equivalent volumes of dilute rhPTP4A1 and dilute Substrate in microtubes. Include an Enzyme Control by combining dilute rhPTP4A1 with twice the volume of 0.2 M NaOH, mix briefly, then add a volume of dilute Substrate equivalent to the volume of rhPTP4A1. The Enzyme Control will have 2x the volume of the reaction mixture.
4. Incubate Reactions and Enzyme Controls at 37 °C for 24 hours.
5. Load 100 µL of Reactions into a plate in triplicate and stop the reactions by adding 100 µL 0.2 M NaOH.
6. Load 200 µL of Enzyme Controls into plate in triplicate.
7. Read plate at 410 nm (absorbance) in endpoint mode.
8. Calculate specific activity:

$$\text{Specific Activity (pmol/min/µg)} = \frac{\text{Adjusted Abs* (OD) x Conversion Factor** (pmol/OD)}}{\text{Incubation time (min) x amount of enzyme (µg)}}$$

*Adjusted for Enzyme Controls.
**Derived using calibration standard p-Nitrophenol (Sigma, Catalog # 241326).

Final Assay Conditions

Per Well:

- rhPTP4A1: 2 µg
- pNPP: 1.25 mM

PREPARATION AND STORAGE

Shipping	The product is shipped with dry ice or equivalent. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	**Use a manual defrost freezer and avoid repeated freeze-thaw cycles.** • 6 months from date of receipt, -70 °C as supplied. • 3 months, -70 °C under sterile conditions after opening.

bio-techne®
Global bio-techne.com info@bio-techne.com techsupport@bio-techne.com TEL +1 612 379 2956
USA TEL 800 343 7475 Canada TEL 855 668 8722 China TEL +86 (21) 52380373
Europe | Middle East | Africa TEL +44 (0)1235 529449

Recombinant Human PRL-1/PTP4A1

Catalog Number: 8490-PT

BACKGROUND

Phosphatase of regenerating liver 1 (PRL-1), also known as protein-tyrosine phosphatase 4A1 (PTP4A1), is a member of the PRL subgroup of PTPases (1). It was originally identified as an immediate-early gene in regenerating liver and later shown to be a PTPase that modulates cell growth (2, 3). PRL-1 is widely expressed in human tissues, and the rat enzyme is expressed in neurons and oligodendrocytes of the cerebral cortex, hippocampus, and cerebellum (4, 5). Human PRL-1 shares 100% amino acid sequence identity with mouse and rat PRL-1. The crystal structure of PRL-1 shows that the protein exists as a trimer (6, 7). PRL-1 localizes to the endoplasmic reticulum in interphase cells in a farnesylation-dependent manner, and to centrosomes during mitosis in a farnesylation-independent manner (8, 9). PRL-1 has been implicated in cell migration, invasion, and metastasis, suggesting that it may play a role in cancer (10-13). PRL-1 promotes colorectal cancer cell growth, migration, and invasion *in vitro* and tumor growth *in vivo* (14). Additionally, elevated PRL-1 expression is correlated with tumor progression in human hepatocellular carcinoma (15).

References:

1. Bessette, D.C. *et al.* (2008) Cancer Metastasis Rev. **27**:231.
2. Mohn, K.L. *et al.* (1991) Mol. Cell. Biol. **11**:381.
3. Diamond, R.H. *et al.* (1994) Mol. Cell. Biol. **14**:3752.
4. Dumaual, C.M. *et al.* (2006) J. Histochem. Cytochem. **54**:1401.
5. Takano, S. *et al.* (1996) Brain Res. Mol. Brain Res. **40**:105.
6. Sun, J.P. *et al.* (2005) Biochemistry **44**:12009.
7. Jeong, D.G. *et al.* (2005) J. Mol. Biol. **345**:401.
8. Zeng, Q. *et al.* (2000) J. Biol. Chem. **275**:21444.
9. Wang, J. *et al.* (2002) J. Biol. Chem. **277**:46659.
10. Zeng, Q. *et al.* (2003) Cancer Res. **63**:2716.
11. Achiwa, H. and J.S. Lazo (2007) Cancer Res. **67**:643.
12. Nakashima, M. and J.S. Lazo (2010) J. Pharmacol. Exp. Ther. **334**:627.
13. Jin, S. *et al.* (2014) Oncotarget **5**:3685.
14. Zhou, C. *et al.* (2013) PLoS One **8**:e63142.
15. Lu, J.W. *et al.* (2012) Clin. Transl. Oncol. **14**:287.

bio-techne®
Global bio-techne.com info@bio-techne.com techsupport@bio-techne.com TEL +1 612 379 2956
USA TEL 800 343 7475 **Canada** TEL 855 668 8722 **China** TEL +86 (21) 52380373
Europe | Middle East | Africa TEL +44 (0)1235 529449