

Product Information

PROTEIN PHOSPHATASE 2A1

From Rabbit Muscle

Product Number **P1740**

Storage Temperature $-20\text{ }^{\circ}\text{C}$

EC: 3.1.3.16

Product Description

Protein phosphatase 2A1 (PP2A1) is an intracellular serine/threonine protein phosphatase responsible for the regulation of a variety of cellular processes.¹ PP2A1 is reported to contribute to metabolism, meiosis, mitosis, the cell cycle, and perhaps apoptosis.^{2,3}

PP2A1 from skeletal muscle is a heterodimer consisting of three subunits, the regulatory subunit A and the catalytic subunit C which make up the core enzyme, and the regulatory B' subunit which binds to the core enzyme to complete the holoenzyme.^{1,4} The A and C subunits each have an α and β isoform; subunit B has multiple isoforms. Subunit A has a molecular weight of 60 kDa, subunit C 36 kDa, and subunit B' 54 kDa.⁸ The heterodimeric core enzyme is known to associate with a variety of proteins including three families of the regulating subunit B (B, B', and B''), viral proteins, and cell signaling molecules.⁵

PP2A1 is involved in the regulation of several kinases and is known to dephosphorylate SV40 large T antigen and P53.⁶ Activity of the enzyme is enhanced in the presence of Mn^{2+} and to a lesser extent by Mg^{2+} .⁷

PP2A1 specifically dephosphorylates phosphoserine and phosphothreonine residues. PP2A1 is not specific for the dephosphorylation of phosphotyrosines.

PP2A1 is inhibited by phosphate, phosphoesters, fluoride, and low levels of okadaic acid ($< 5\text{ nM}$).⁸ In addition, to maintain the activity of the enzyme, sulfhydryl compounds must be present.⁸ PP2A1 is resistant to protein phosphatase inhibitor-2 (I-2).⁸

PP2A1 is purified using the method of Reinhart.⁸

PP2A1 is supplied as a solution in 50 mM Tris-HCl, pH 7.5, 0.1 mM EGTA, 0.02% Brij-35, 0.2 mM PMSF, 1 mM benzamidine, 0.1% 2-mercaptoethanol, and 50% glycerol.

Unit definition: One unit will release one nanomole phosphate per minute from ^{32}P -labeled phosphorylase A at $37\text{ }^{\circ}\text{C}$ at pH 7.4.

Preparation Instructions

PP2A1 can be diluted with 0.1% 2-mercaptoethanol, 0.1 mM EGTA, 1 mg/mL BSA, and 50 mM Tris-HCl, pH 7.0.

Storage/Stability

Store product at $-20\text{ }^{\circ}\text{C}$. Stable for 6 months if stored as recommended.

Precautions and Disclaimer

This product is for laboratory research use only. Please consult the Material Safety Data Sheet for handling recommendations prior to working with this material.

References

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3. Gjertsen, B. T., and Doskeland, S. O., Protein phosphorylation in apoptosis. *Biochim. Biophys. Acta.*, **1269**, 187-99 (1995).
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5. Kambayashi, C., et al., Comparison of heteromeric protein phosphatase 2A containing different B subunits. *J. Biol. Chem.*, **269**, 20139-20148 (1994).

6. Scheidtmann, K. H., et al., Dephosphorylation of SV40 large-T antigen and P53 protein. *Mol. Cell. Biol.*, **11**, 1996-2003 (1991).
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8. Reinhart, P. H., et al., Modulation of calcium-activated potassium channels from rat brain by protein kinase A and phosphatase 2A. *J. Neurosci.*, **11**, 1627-1635 (1991).

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