The PP2A inhibitor proteins, I1PP2A and I2PP2A, were discovered in the laboratory of GloboZymes founder Dr. Zahi Damuni. There has been progress since that time in numerous laboratories around the world demonstrating further the significance of these proteins in the regulation of PP2A and in various diseases including cancer and Alzheimers, for example. I2PP2A is also known as putative histocompatibility leukocyte antigen class II protein (PHAP-II), template activating factor 1 (Taf-1β), and inhibitor of histone acetyltransferase (INHAT). Like I1PP2A, it is a potent noncompetitive inhibitor of Protein Phosphatase 2A (PP2A), a major mammalian protein serine/threonine phosphatase that regulates diverse cellular processes. Purified preparations of I2PP2A inhibit all forms of the phosphatase (GLO130-132) tested to date in a substrate selective manner. For example, the preparations inhibit PP2A potently (ki ~ 0.1 - 0.5 nM) with myelin basic protein (MBP, GLO126-010, GLO126-025) and histone H1 but not with casein as substrate. In a patient with acute undifferentiated leukemia, I2PP2A was found to occur as a fusion protein with the nucleoporin CAN (NUP214) apparently produced by a somatic translocation event. I2PP2A was also shown to be highly expressed in Wilms tumor but not in renal cell carcinoma, adult polycystic kidney disease or in transitional cell carcinoma. I2PP2A also associates with HRX leukemia-associated fusion proteins. Elevated expression of I1PP2A and I2PP2A in the brain of Alzheimers patients has been noted and is believed to contribute, at least in part, to the hyperphosphorylation of Tau protein via the inhibition of PP2A. Transient expression of I2PP2A in HEK-293 cells leads to an increase in the DNA binding activity of the proto-oncogene c-Jun consistent with the suppression of PP2A activity in intact cells. The apoptic sphingolipid second messenger cermaide has been shown to bind I2PP2A and prevent it from inhibiting PP2A. This is believed to contribute to the mechanism by which ceramide promotes apoptosis. I2PP2A also prevents inhibition of E-CDK-2 by p21Cip1, associates with B cyclin, regulates histone binding to DNA, transcriptional activity and chromatin condensation. Evidence exists that I2PP2A undergoes phosphorylation at Ser9 and Ser24 in intact cells. The functional significance of these phosphorylations is uncertain although recent studies indicate that Ser9 phosphorylation may causes cytoplasmic detention of I2PP2A in Alzheimer disease.

**Catalog**

GLO141-001

**Price/vial**

$378.00

**Source**

Recombinant human kidney produced in *E. coli*

**Purity**

> 90% by SDS-PAGE, apparent Mr ~ 39-kDa (see figure below).

**Supplied**

1 mg in 50 ml 50 mM Tris-HCl pH 7.0 buffer containing 14 mM β-mercaptoethanol, 1 mM benzamidine, 0.1 mM phenylmethanesulfonyl fluoride, 1 mM EDTA, 0.1% Brij-35 and 10% glycerol.

**Storage**

Maintain preparations in aliquots at -70 °C. Avoid repeated thawing.

GloboZymes products are for basic science research purposes only. They are not intended for human drug, food additive, clinical or household use.
Figure: SDS-PAGE patterns of purified preparations of I1PP2A (GLO140-001) and I2PP2A (GLO141-001). The position of marker proteins phosphorylase (97-kDa), bovine serum albumin (67-kDa), ovalbumin (43-kDa), carbonic anhydrase (30-kDa) and trypsin inhibitor (20-kDa) is indicated. The arrows denote the positions of I1PP2A (30-kDa) and I2PP2A (39-kDa). The gel was stained with Coomassie Blue.

References

2. von Lindern, M. et al (1992) "Can, a putative oncogene associated with myeloid leukemogenesis, may be activated by fusion of its 3' half to different genes: characterization of the set gene" Mol Cell Biol 12, 3346-3355

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