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ProductInformation

Myo-Inositol Monophosphatase from bovine brain

Product Number **I 0274**
Storage Temperature –0 °C

CAS# 37184-63-7
E.C.# 3.1.3.25
Synonyms: Myo-Inositol monophosphate phosphohydrolase

Product Description

This enzyme plays a critical role in the cycling of inositol to phosphoinositides in the mammalian brain and participates in the phosphatidylinositol signaling pathway. The enzyme consists of two 29 kDa subunits with a pI of 4.9 and is inhibited by Li^+ with a K_i of 0.61 mM for inositol-1-P and 0.26 mM for inositol-4-P as substrates. This enzyme also hydrolyzes other compounds, such as 2'-AMP and glycerol-2-phosphate.

Receptor mediated action of phospholipase C on phosphoinositides gives rise to inositol mono- and poly-phosphates, which are further dephosphorylated to inositol. The monophosphate substrates are inositol-1-phosphate and inositol-4-phosphate.[1] The recylcing of second messenger phospholipids, such as inositol-1,4,5-triphosphate, in the brain requires the inositol phosphates to be hydrolyzed to free inositol, since there is no endogeneous uptake mechanism for inositol in the brain.

The substrate specificity and the lithium susceptibility for bovine myo-inositol monophosphatase[2]

Substrate	V_{max}	K_m (mM)	K_i (mM Li^+)
Inositol-1-P	100	0.13	0.61
2'-AMP	157	0.58	1.70
Glycerol-2-phosphate	118	0.38	3.08

Myo-inositol monophosphatase is inhibited non-competitively by Li^+ and this may be significant in the treatment of manic-depressive psychosis by lithium.[3] Understanding the mechanism of this inhibition could enable more effective treatment of the disease and the use of the enzyme as a biological model for searching for new inhibitors has been published.[4,5,6]

The product is as a lyophilized powder containing HEPES buffer salts, pH 7.5, and a stabilizer. The protein content is approximately 0.5% (Bradford).

Specific Activity: 5-20 units/mg protein (Bradford)

Unit Definition: One unit will form 1.0 µmole of phosphate from inositol 1-phosphate per minute at pH 7.4 at 37 °C.

Precautions and Disclaimer

This product is for laboratory research use only. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

For the Quality Control assay, the enzyme is reconstituted at a concentration of 0.5 mg/ml in 50 mM Tris-HCl, pH 7.4, with 0.5 mg/ml BSA.

Storage/Stability

It is recommended to store the product at –0 °C.
The lyophilized enzyme shows a loss of activity of 10% or less after 7 days at 37 °C and approximately 20% loss of activity is observed after 8 days at 37 °C in solution.

References

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