

Product Information

Protein Kinase A from bovine heart

P5511

Storage Temperature -20 °C

EC 2.7.11.11 (Formerly 2.7.1.37)

Synonyms: PKA; cAMP-dependent protein kinase; ATP: protein phosphotransferase (cAMP-dependent)

Product Description

Protein Kinase A (PKA) catalyzes the transfer of the terminal phosphate of ATP to threonine or serine residues in a variety of protein substrates. The enzyme is composed of two subunit types: a catalytic subunit and a regulatory subunit. In the absence of cAMP, the two subunits are bound to each other and no catalysis can take place. In the presence of cAMP, the regulatory subunit binds cAMP, thus releasing the catalytic subunit¹.

A reducing agent such as dithiothreitol is necessary to maintain reduced thiol groups and enzyme activity. The presence of a divalent cation is an absolute requirement for protein kinase A activity. Mg²⁺ at 10 mM yields best results; Co²⁺ can partially substitute for Mg²⁺ but 10 mM Ca²⁺ inhibits protein kinase activity², even in the presence of magnesium ions. The enzyme is inhibited by H-7, H-8, HA 1077, genestein, hypericin, staurosporine, and HA 100³.

The product is lyophilized from a solution containing: 5–10% potassium phosphate buffer, pH 7.5, 5–10% EDTA, and 80–90% protein (biuret assay).

Our quality control process improvement has developed a revised enzymatic activity assay procedure.

New Unit Definition: One unit will transfer 1.0 picomole of phosphate from γ -³²P-ATP to hydrolyzed, partially dephosphorylated casein per minute at pH 6.5 at 30 °C in the presence of cAMP, determined by measuring the production of ADP.

Original Unit Definition was: One unit will transfer 1.0 picomole of phosphate from γ -³²P-ATP to hydrolyzed, partially dephosphorylated casein per minute at pH 6.5 at 30 °C in the presence of 0.006 mM cAMP.

400 new units are approximately equal to 1000 original units.

Specific activity: ≥ 0.8 unit/ μ g protein.

Precautions and Disclaimer

This product is for R&D use only. Not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

It is recommended that a 1 mg/mL or greater stock solution be prepared in water or 0.5 mM citrate buffer, pH 6.5, and stored in aliquots at -20 deg °C.

Storage/Stability

Store the product at -20 °C. The dry solid is shipped at ambient temperature with minimal loss in activity. When stored at -20 °C with desiccant, the protein will lose < 10% activity per year.

References

1. Beavo, J.A. *et al.*, *Methods in Enzymology*, **38**, 299 (1974).
2. Shoji, S. *et al.*, *Biochemistry*, **22**, 3702-3709 (1983).
3. Handbook of Enzyme Inhibitors, 2nd ed., part A, Zollner, H., VCH (Weinheim, Germany: 1993), pp. 419-420.

Notice

We provide information and advice to our customers on application technologies and regulatory matters to the best of our knowledge and ability, but without obligation or liability. Existing laws and regulations are to be observed in all cases by our customers. This also applies in respect to any rights of third parties. Our information and advice do not relieve our customers of their own responsibility for checking the suitability of our products for the envisaged purpose.

The information in this document is subject to change without notice and should not be construed as a commitment by the manufacturing or selling entity, or an affiliate. We assume no responsibility for any errors that may appear in this document.

Technical Assistance

Visit the tech service page at SigmaAldrich.com/techservice.

Standard Warranty

The applicable warranty for the products listed in this publication may be found at SigmaAldrich.com/terms.

Contact Information

For the location of the office nearest you, go to SigmaAldrich.com/offices.

The life science business of Merck KGaA, Darmstadt, Germany operates as MilliporeSigma in the U.S. and Canada.

MilliporeSigma, and Sigma-Aldrich are trademarks of Merck KGaA, Darmstadt, Germany or its affiliates. All other trademarks are the property of their respective owners. Detailed information on trademarks is available via publicly accessible resources.

© 2022 Merck KGaA, Darmstadt, Germany and/or its affiliates. All Rights Reserved.

P5511dat Rev 04/22

**Millipore
Sigma**