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Product Information

Apyrase
from potatoes

Catalog Number **A6132**
Storage Temperature –20 °C

CAS RN 9000-95-7
EC 3.6.1.5
Synonyms: Adenosine 5′-diphosphatase, Adenosine 5′-triphosphatase, ATP diphosphohydrolase[1]

Product Description

Apyrase has adenosine 5′-triphosphatase (ATPase) and adenosine 5′-diphosphatase (ADPase) activities,[2] where hydrolysis of the pyrophosphate bonds leads to sequential release of inorganic orthophosphate.[3] At least two isoenzymes with different ATPase/ADPase ratios exist in different varieties of potato (*Solanum tuberosum*):[4,5]

- 'Pimpernel' isoenzyme, with a high ATPase/ADPase ratio of ~10:1 and an isoelectric point (pI) of 8.74
- 'Desirée' isoenzyme, with a low ATPase/ADPase ratio of ~1:1 and an isoelectric point (pI) of 6.69

These isozymes each have a molecular mass of ~49 kDa (gel filtration).[5] This product contains isoenzymes with both high and low ATPase/ADPase ratios.

Apyrase requires divalent metal ions for activity, with optimal activity observed with Ca^{2+} at 5 mM. For hydrolysis of organic di- and triphosphates, the optimal pH is 6.[5] For inorganic substrates, the optimal pH is 5.1.[5]

Preparation Instructions

This product is soluble in water (1 mg/mL).

Storage/Stability

Enzyme solutions in water at ≥1 mg/mL, stored as frozen aliquots, are stable. Stock solutions at pH between 5–7.5 can be stored as frozen aliquots. For enzyme solutions of <1 mg/ml, dissolve in HEPES buffer, pH 7.5, containing 1 mM $MgC1_2$,1 mM DTT, 1 mM EDTA, and 1 mg/mL bovine albumin. Repeated freeze-thaw cycles and room temperature exposure for several hours will result in loss of activity. A solution of apyrase stored at 0–4 °C will gradually form a black insoluble precipitate with nearly the same activity as the soluble form.

One publication reports storage of apyrase stock solutions at 660 units/mL in 30 mM HEPES, pH 7.2, at –20 °C.[6] Another report indicates storage of 340 units/mL stock solutions of apyrase in calcium-free Tyrode's buffer, at –20 °C, in single-use aliquots.[7]

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.

References

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4. Molnar, J., and Lorand, L., *Arch. Biochem. Biophys*., **93(2)**, 353-363 (1961).
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7. Rutledge, T.W., and Whitehart, S.W., "Studies of Secretion from Permeabilized Platelets", in *Methods in Molecular Biology: Platelets and Megakarocytes, Vol. I – Functional Assays*, Vol. 272 (J.M. Gibbins and M.P. Mahaut-Smith, eds.). Humana Press, pp. 109-120 (2004).

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