

Product Information

Apyrase from potatoes

ATPase \geq 200 units/mg protein, lyophilized powder**A6535**

Product Description

CAS Number: 9000-95-7

Enzyme Commission (EC) Number: 3.6.1.5

Synonyms: Adenosine 5'-diphosphatase, Adenosine 5'-triphosphatase, ATP diphosphohydrolase¹

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
 - High ATPase/ADPase ratio of \sim 10:1
 - Isoelectric point (pI) of 8.74
- 'Desirée' isoenzyme
 - Low ATPase/ADPase ratio of \sim 1:1
 - Isoelectric point (pI) of 6.69

These isozymes each have a molecular mass of \sim 49 kDa (gel filtration).⁵ This product is predominantly the low ATPase/ADPase ratio isozyme.

Apyrase requires divalent metal ions for activity, with optimal activity observed with 5 mM Ca²⁺.

- For hydrolysis of organic diphosphates and triphosphates, the optimal pH is 6.⁵
- For inorganic substrates, the optimal pH is 5.1.⁵

Several theses^{6,7} and dissertations⁸⁻¹⁵ have cited use of product A6535 in their research protocols.

Precautions and Disclaimer

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

This product is soluble in water (1 mg/mL). One publication reports preparation of 125 units/mL stock solutions of this product in 10 mM HEPES (pH 7.8).¹⁶

Storage/Stability

- Stock solutions at pH between 5-7.5 can be stored as frozen aliquots, such as in 30 mM HEPES, pH 7.2.¹⁷
- For enzyme solutions of $<$ 1 mg/mL, dissolve in HEPES buffer (pH 7.5) containing 1 mM MgCl₂, 1 mM DTT, 1 mM EDTA, and 1 mg/mL BSA.
- Repeated freeze-thaw cycles risk loss of activity.
- One publication indicates storage of 340 units/mL stock solutions of apyrase in calcium-free Tyrode's buffer, at -20 °C, in single-use aliquots.¹⁸

References

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