

## Product Information

### Apyrase

from potatoes

Catalog Number **A7646**

Storage Temperature  $-20\text{ }^{\circ}\text{C}$

CAS RN 9000-95-7

EC 3.6.1.5

Synonyms: Adenosine 5'-diphosphatase, Adenosine 5'-triphosphatase, ATP diphosphohydrolase<sup>1</sup>

### Product Description

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

- '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).<sup>5</sup> This product contains isoenzymes with both high and low ATPase/ADPase ratios.

Apyrase requires divalent metal ions for activity, with optimal activity observed with 5 mM  $\text{Ca}^{2+}$ . For hydrolysis of organic di- and triphosphates, the optimal pH is 6.<sup>5</sup> For inorganic substrates, the optimal pH is 5.1.<sup>5</sup>

### Preparation Instructions

This product is soluble in water at 10 mg/mL. One publication has reported preparation of 1,000 units/mL stock solutions in PBS.<sup>6</sup>

### 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.<sup>7</sup> For enzyme solutions of <1 mg/ml, dissolve in HEPES buffer, pH 7.5, containing 1 mM  $\text{MgCl}_2$ , 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  $-20\text{ }^{\circ}\text{C}$ , in single-use aliquots.<sup>8</sup>

### 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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3. Mancilla, M., *et al.*, *Phytochemistry*, **23(7)**, 1397-1400 (1984).
4. Molnar, J., and Lorand, L., *Arch. Biochem. Biophys.*, **93(2)**, 353-363 (1961).
5. Kettlun, A., *et al.*, *Phytochemistry*, **21(3)**, 551-558 (1982).
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8. Rutledge, T.W., and Whitehart, S.W., "Studies of Secretion from Permeabilized Platelets", in *Methods in Molecular Biology: Platelets and Megakaryocytes, Vol. I - Functional Assays*, Vol. 272 (J.M. Gibbins and M.P. Mahaut-Smith, eds.). Humana Press, pp. 109-120 (2004).

GCY,MES,NSB,CMH,RXR,MAM 12/16-1