

Product Information

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Acid Phosphatase from wheat germ

Catalog Number **P3627**

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

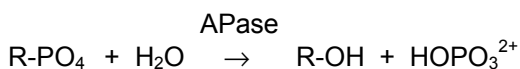
CAS RN 9001-77-8

EC 3.1.3.2

Synonyms: APase; Orthophosphoric-monoester phosphohydrolase (acid optimum)

Product Description

Acid phosphatases (APase) are a family of enzymes that non-specifically catalyze the hydrolysis of monoesters and anhydrides of phosphoric acid to produce inorganic phosphate at an optimum pH of 4 to 7 by the following reaction:



Their function in the production, transport, and recycling of phosphate is critical for the metabolic and energy transduction processes of the cell. As a group, APases may be as important as kinases in regulatory processes.¹

Plant APases have been localized in the cytosol, vacuoles, and cell walls. One key role is phosphate acquisition to mobilize organic phosphates in the soil.² Phosphate starvation also induces APase generation. Originating from the aleurone and scutellar tissues during germination, APases hydrolyze phytins, ATP, protein phosphates, nucleotide phosphates, and have a role in general metabolic reactions.³

Wheat embryo APase consists of four isoenzymes distinguishable by chromatography.^{4,5} One isoenzyme exhibits substrate inhibition for some substrates below pH 6, but exhibits substrate activation above pH 8.⁴

Molecular mass:^{4,6} 58 kDa (gel filtration)

pH Optimum:⁷ 5.7

pH Range:⁴ 4.0–7.0

Temperature optimum:⁸ 45 °C

Substrates:^{7,9}

1-glycerate phosphate	AMP
1-naphthyl phosphate	ADP
2-glycerophosphate	ATP
2,3-diglycerophosphate	GTP
glucose-1-phosphate	UMP
glucose-6-phosphate	phosphoenol pyruvate
D-fructose-1,6-diphosphate	
p-nitrophenyl phosphate	

K_M :⁷ 0.27 mM (3-phosphoglycerate)

Inhibitors:⁷

Hg ²⁺	100% (0.3 mM)
Pb ²⁺	75% (0.13 mM)
Ag ²⁺	100% (8.0 mM)
Zn ²⁺	100% (12.0 mM)
Cu ²⁺	100% (12.0 mM)

This product is partially purified from wheat germ and is supplied as a green-brown lyophilized powder.

Specific activity: ≥ 0.4 unit/mg solid

Unit definition: One unit will hydrolyze 1.0 μmole of p-nitrophenyl phosphate per minute at pH 4.8 at 37 °C.

APase is assayed spectrophotometrically in a 1.1 ml reaction mixture containing 41 mM citrate buffer, pH 4.8 at 37 °C, 6.9 mM p-nitrophenyl phosphate, and 0.015–0.025 unit APase.

Other activity:

Lipase: ~ 10 units/mg solid

Precautions and Disclaimer

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

Preparation Instructions

APase is soluble in cold water (0.15–0.25 unit/ml).
Prepare solution immediately before use.

Storage/Stability

Store the product at –20 °C. When stored at –20 °C, the enzyme retains activity for at least one year.

References

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KAD,RBG,JWM,MAM 12/07-1

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