Cholesterol Esterase from *Pseudomonas* sp.

Catalog Number C9281
Storage Temperature –20 °C

CAS RN 9026-00-0
EC 3.1.1.13
Synonyms: Bile salt activated lipase, sterol esterase, carboxyl ester lipase, steryl-ester acylhydrolase

Product Description
Excess cholesterol is stored intracellularly as cholesterol esters. Cholesterol esterase (CE) is a reversible enzyme that can hydrolyze or synthesize fatty acid esters of cholesterol and other sterols. Hydrolysis of water insoluble long chain fatty acid esters requires bile salt activation. Hydrolysis of water soluble esters of short chain fatty acids and lysophospholipids does not require activation by bile salts.¹ Cholesterol esterase catalyzes the following reaction:

\[
\text{Cholesterol esters} \xleftrightarrow{\text{esterase}} \text{Cholesterol} + \text{Fatty acid}
\]

In the bovine adrenal cortex, this reaction is one of the rate limiting steps in steroidogenesis, involving the release of cholesterol from cytoplasmic cholesterol esters.² This enzyme is widely used in the determination of serum cholesterol in diagnostic laboratories.³

Molecular mass: –129 kDa
pH range: 7.0–9.0

Substrates: CE hydrolyzes cholesterol fatty acid esters in the following order (relative reaction rates):
Linoleate (18:2) > Palmitate (16:0) > Caprate (10:0) > Acetate (2:0).⁴

Activators: cholic acid, glycocholic acid, BSA, Mg²⁺, 0.3% (v/v) TRITON® X-100

Inhibitors: Ag⁺, Hg²⁺, ionic detergents

This product (Catalog Number C9281) is supplied as a tan lyophilized powder containing –20% protein (biuret), potassium phosphate, and TRITON X-100 as an activator.

Specific activity: ≥10,000 units/g protein (biuret)

Unit definition: one unit will hydrolyze 1.0 µmole of cholesteryl oleate to cholesterol and oleic acid per minute at pH 7.0 at 37 °C in the presence of taurocholate.

Cholesterol esterase is assayed spectrophotometrically in a 3.0 ml reaction mixture containing 287 mM potassium phosphate, pH 7.0, 0.25% (w/v) taurocholic acid, 0.25% (w/v) cholic acid, 4–6 units peroxidase, 1.4 mM cholesteryl oleate, 1.7% (v/v) polyoxyethylene 9-lauryl ether, 0.14% (w/v) NaCl, 0.083% (w/v)phenol, 0.03% (w/v) 4-aminoantipyrine, 1–1.5 units cholesterol oxidase, and 0.013–0.143 unit cholesterol esterase.

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
Cholesterol esterase is soluble in 0.4 M potassium phosphate, pH 7.0 (1 mg/ml).

Storage/Stability
Store the product at –20 °C. When stored at –20 °C, the enzyme retains activity for at least two years.

Reconstituted cholesterol esterase will remain stable at pH 6.0–6.5 for at least 25 hours at 25 °C.
References

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