For life science research only.
Not for use in diagnostic procedures.

Lysozyme

Muramidase, N-acetylmuramide glycanohydrolase isolated from hen egg white Peptidoglycane N-acylmuramoylhydrolase

Version: 07
Content Version: June 2021

Crystals

Cat. No. 10 837 059 001 10 g
Not available in US

Store the product at +2 to +8°C.

1. General Information

1.1. Contents

Vial / Bottle	Label	Function / Description	Content
1	Lysozyme, Muraminidase from hen egg white	Hydrochloride	1 vial, 10 g

1.2. Storage and Stability

Storage Conditions (Product)

When stored at +2 to +8°C , the product is stable through the expiry date printed on the label.

Vial / Bottle	Label	Storage
1	Lysozyme	Store at +2 to +8°C.

Storage Conditions (Working Solution)

Store aqueous solutions of the hydrochloride (2 mg/ml) for several days at +2 to +8°C or several weeks at −15 to −25°C.

1.3. Application

Use Lysozyme for
- Preparation of protoplasts.
- Bacteriolysis
- Pharmacology
- Food and drinks as a flavor enhancer.
- Sample preparation prior to isolation of nucleic acids.

2. How to Use this Product

2.1. Before you Begin

General Considerations

Typical analysis

Parameter	Value
Purity	95 to 100 %
Ativity	>23,000 Shugar U/mg

2.2. Parameters

Contaminants

Microbiological assay

Total plate count: 100/g
Fungi and yeasts: 10/g
E. coli: not detected in 25 g
Salmonella: not detected in 25 g

EC-Number

EC 3.2.1.17

Inhibition

Surfactants (sodium dodecyl sulfate, C12 or higher alcohols and fatty acids) or iodine.

Isoelectric Point

The isoelectric point of Lysozyme is pH 10.6 to 10.9.

Molecular Weight

Approximately 14.4 kDa.

pH Stability

In alkaline solution, the activity of Lysozyme falls rapidly at elevated temperatures.

Sequence

Lysozyme is a positively charged polypeptide consisting of 129 amino acid residues:

1				
KVFGRCELAA	AMKRHGLDNY	RGYSLGNWVC	AAKFESNFNT	QATNRNTDGS
51				
TDYGILQINS	RWWCNDGRTP	GSRNLCNIPC	SALLSSDITA	SVNCAKKIVS
101				
DGNGMNAWVA	WRNRCKGTDV	QAWIRGCRL		

Specific Activity

With *Micrococcus luteus* as substrate, the specific activity of Lysozyme at a temperature of +25°C is approximately 50,000 U/mg, where the unit is the Shugar unit.

Specificity

Lysozyme hydrolytically cleaves the bonds between N-acetyl-β-D-glucosamine and N-acetylmuramic acid residues (GlcNAc β1-4Mur) in mucopolysaccharides and the glycan skeletons of the corresponding peptidoglycans (the latter are glycosaminoglycans linked to or crosslinked by peptide chains). It therefore destroys the cell walls of bacteria.

Temperature Stability

Acid solutions of Lysozyme are stable, even at temperatures up to +100°C.

Unit Definition

One Shugar unit is that quantity of enzyme in 1 ml of a suspension of *Micrococcus luteus* of pH 7.0 whose initial absorbance at a wavelength of 450 nm is 0.750 for a pathlength of 10 mm, which causes the absorbance to decrease at the rate of 0.001 per minute, all measurements being carried out at a temperature of +25°C.

3. Additional Information on this Product

3.1. Test Principle

The bacteriostatic properties of the enzyme Lysozyme were first described by Alexander Fleming, the discoverer of penicillin, although its *in vivo* antibacterial activity and role in the regeneration of tissue were not demonstrated until much later.

- Lysozyme lyses various microorganisms by hydrolyzing the β(1–4) glucoside linkages of the glycosaminoglycans (mucopolysaccharides) their cell walls are composed of.
- Most body fluids contain some Lysozyme: it has been found in urine, tears, saliva, blood, and milk, and in cell plasma. It occurs in leukocytes, neutrophilic granulocytes, monocytes, and macrophages in high concentrations, but little is found in lymphocytes.

Lysozyme plays an important part both in regulating the immune response in organisms and in reactions to infection and inflammation. Its effects are achieved partly by direct physicochemical action and partly by activation of the immune system. As an enzyme, it supports bacteriolysis via the immune system and increases leukocytic phagocytosis, and it can also potentiate antibiotic activity.

Substrates

Lyophilized cells from *Micrococcus luteus* (= *Micrococcus lysodeikticus*) (ATCC strain 4698).

Solubility

Lysozyme hydrochloride is readily soluble in water and buffer solutions but insoluble in organic solvents.

4. Supplementary Information

4.1. Conventions

To make information consistent and easier to read, the following text conventions and symbols are used in this document to highlight important information:

Text convention and symbols	
Information Note: Additional information about the current topic or procedure.	
Important Note: Information critical to the success of the current procedure or use of the product.	
① ② ③ etc.	Stages in a process that usually occur in the order listed.
❶ ❷ ❸ etc.	Steps in a procedure that must be performed in the order listed.
* (Asterisk)	The Asterisk denotes a product available from Roche Diagnostics.

4.2. Changes to previous version

Layout changes.
Editorial changes.

4.3. Trademarks

All product names and trademarks are the property of their respective owners.

4.4. License Disclaimer

For patent license limitations for individual products please refer to:
List of biochemical reagent products.

4.5. Regulatory Disclaimer

For life science research only. Not for use in diagnostic procedures.

4.6. Safety Data Sheet

Please follow the instructions in the Safety Data Sheet (SDS).

4.7. Contact and Support

To ask questions, solve problems, suggest enhancements or report new applications, please visit our **Online Technical Support Site**.

To call, write, fax, or email us, visit **sigma-aldrich.com**, and select your home country. Country-specific contact information will be displayed.

0621.11743813001 ©

Roche Diagnostics GmbH
Sandhofer Strasse 116
68305 Mannheim
Germany