

Three Ways to Increase Protein Yield for High Throughput Screening, Preparative Purification, or Bioprocessing

1 Ready-Lyse™ Lysozyme Solution Improves Protein Yield by More Efficient Bacterial Lysis

Many protocols for the isolation of proteins for high throughput activity assays or for preparative purification from bacteria use egg white lysozyme to aid the breakdown of cell walls. Egg white lysozyme is positively charged at neutral pH and will bind and precipitate negatively charged proteins thus reducing their yield. Ready-Lyse™ Lysozyme Solution is a non-mammalian, non-avian recombinant lysozyme preparation with a specific activity 200-fold higher than that of egg-white lysozyme. Thus, much less Ready-Lyse Lysozyme is required per reaction resulting in an increased yield of protein from bacteria cells with minimal contamination by exogenously added lysozyme.

Ready-Lyse Lysozyme can be used for the lysis of Gram-negative and Gram-positive bacteria and utilizes a gentle procedure that does not require sample agitation or heat generation, which can result in protein denaturation. In addition, Ready-Lyse Lysozyme is stable at -20°C, thus eliminating the need to prepare a fresh solution for each use, as is the case for egg white lysozyme.

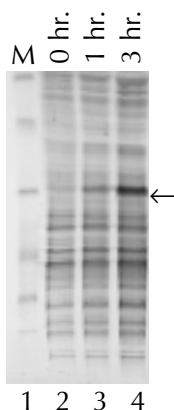


Figure 1. Use of Ready-Lyse™ Lysozyme Solution to recover recombinant proteins. One ml of induced cells from a recombinant *E. coli* clone was pelleted by microcentrifugation before induction and at 1 and 3 hours after induction. Each sample was resuspended in 50 μ l of cold TEBC buffer. One μ l of Ready-Lyse Solution was added to each suspension and the cells were incubated at room temperature for 30 minutes. The cell debris was pelleted and 10 μ l of the supernatant were run on an SDS-PAGE gel. Lane 1, molecular weight markers; Lanes 2-4, time points of induction. The induced protein is designated by an arrow.

2 OmniCleave™ Endonuclease Removes Contaminating Nucleic Acids from Protein Preparations

OmniCleave™ Endonuclease is a highly purified enzyme that degrades all forms of single- and double-strand DNA and RNA to di-, tri- and tetranucleotides (Figure 1). In addition, OmniCleave Endonuclease is active within a broad range of conditions normally used in protein preparations. Use OmniCleave Endonuclease to:

- Improve the handling and yield of protein preparations by reducing the viscosity of cell lysates due to nucleic acids.
- Remove trace contamination by nucleic acids in protein preparations.
- Improve the electrophoretic and chromatographic separation of proteins isolated from whole cell lysates.

OmniCleave Endonuclease is tested to be free of detectable protease activity.

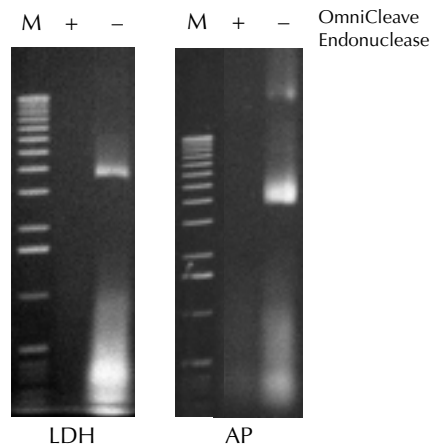


Figure 1. Removal of nucleic acids from cell lysates using OmniCleave™ Endonuclease. Cell lysates were prepared with or without OmniCleave Endonuclease from *E. coli* cells expressing human lactate dehydrogenase B (LDH) and *E. coli* alkaline phosphatase (AP). Two microliters of each of the cell lysates were separated by electrophoresis on a 1% agarose gel and the nucleic acids detected by ethidium bromide staining. Lane M, 1 Kb ladder.

3 ReadyPreps™ Protein Preparation Kit

The ReadyPreps™ Protein Preparation Kit combines Ready-Lyse Lysozyme Solution with OmniCleave™ Endonuclease for high-throughput screening and small scale purification of proteins from bacterial cells. The ReadyPreps Kit is:

- Rapid - most preparations can be completed in 20 - 45 minutes.
- Gentle - no heating steps that can denature proteins are required.

Protein purifications using the ReadyPreps Kit are compatible with most downstream purification processes (e.g. ammonium sulfate precipitation, column chromatography, etc.).

RNase I is included in the kit for removing cellular RNA in the event that the plasmid DNA and protein are extracted simultaneously.

Ready-Lyse™ Lysozyme Solution

R1802M	2 x 10 ⁶ U
R1804M	4 x 10 ⁶ U
R1810M	10 x 10 ⁶ U

This product is available animal product-free in bulk. Please inquire.

OmniCleave™ Endonuclease

OC7810K	200 U/ μ l 10,000 U
OC7850K	200 U/ μ l 50,000 U

Provided with Dilution Buffer.

This product is available animal product-free in bulk. Please inquire.

ReadyPreps™ Protein Preparation Kit (for total cellular proteins)

RP78100	100 1-ml Preparations
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Reagents sufficient to process 5 g of cells.

Contents:

ReadyPreps™ Lysis Buffer A
 ReadyPreps™ Lysis Buffer B
 OmniCleave™ Endonuclease
 RNase I
 1 M MgCl₂
 0.5 M EDTA
 Lysis Test Reagent