Lyse samples and purify proteins faster with OmniLyse®

OmniLyse® kit is a micro-scale, disposable device developed for rapid disruption of all cell types, including hard-to-lyse microbial cells and spores, and reduces the time taken for lysis and protein sample preparation to a few minutes.[1] By using this break-through technology, users are given the advantage of less time spent on lysis compared to the traditional methods of sonication, homogenization and chemical lysis. This device features a 1-step protocol for ease-of-use, disposability, and cost effectiveness. As a result, researchers and technicians can move rapidly into downstream protein purification with minimal effort exerted. OmniLyse™ is ideal for use at the lab bench, in the hood, in the cold room or in the field, while absorbing absolutely no footprint.

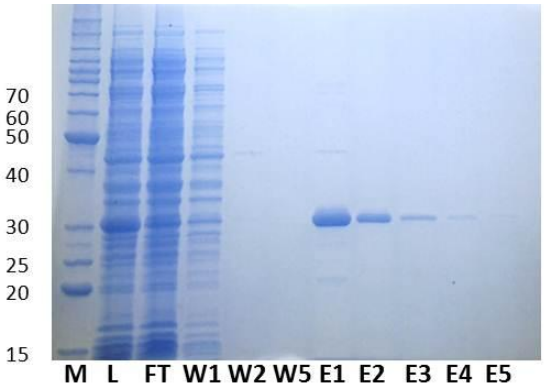
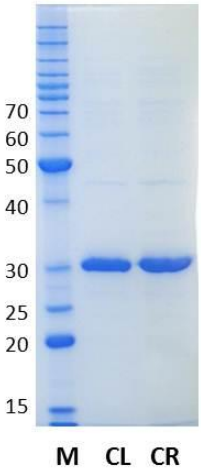


Figure 1. OmniLyse™ sample preparation expedites lysis to purified protein in under 15 minutes . Bacteria expressing 6xHis-EmGFP were lysed for 3 minutes in OmniLyse™. Lysate was applied directly to Ni-IDA resin and purified according to instructions . M = marker, L = lysate, FT = flow-through, W = wash and E = elution.

Figure 2. OmniLyse™ eliminates the need for a preclearing step. Bacteria expressing 6xHis-EmGFP were lysed using OmniLyse™ and either directly applied to Ni-IDA resin (crude = CR) or clarified (CL) by centrifugation at 12,000xg for 15 minutes before applying to Ni-IDA resin. Protein was purified according to instructions. M = marker



[1] US and Intl. patents pending for OmniLyse™ technology.

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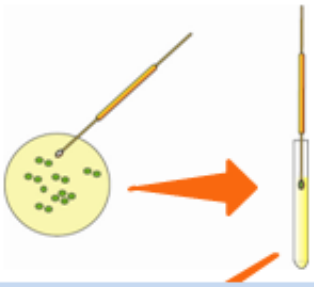
ClaremontBio Solutions

Start with bacterial cultures transformed with pGFP-His plasmid DNA

Pick a single fluorescent green colony from the agar plate using a sterile inoculation loop

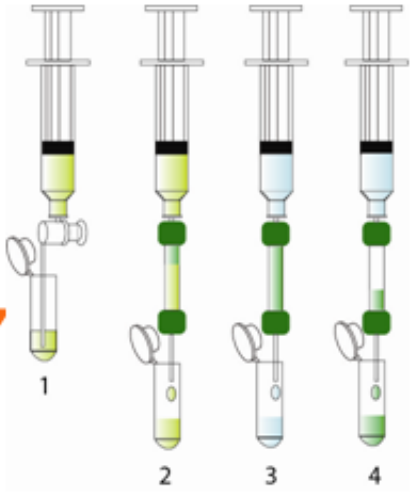


Inoculate into nutrient broth containing ampicillin and arabinose

Grow overnight at 32ºC or 2 days at room temperature with shaking

Transfer bacterial cells to a microfuge tube and centrifuge

Remove supernatant and resuspend bacterial pellet in lysis buffer

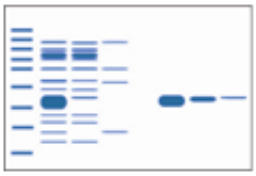


15 minute protocol

1. Lyse cells
2. Add lysate to column
3. Wash column
4. Elute GFP-His with imidazole

Separate GFP-His from bacterial proteins

Analyze purified GFP-His by SDS-PAGE



Purified GFP-His

Use protein gel electrophoresis to conduct quantitative and qualitative analysis of fractions

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Benefits of using OmniLyse™

- Time savings - lysis to purification in <15 minutes
- Eliminates the need for lysozyme or DNase treatment
- Disposable
- Ideal for the lab bench, the hood, the cold room or in the field
- Easily adapted to variety of chromatography products

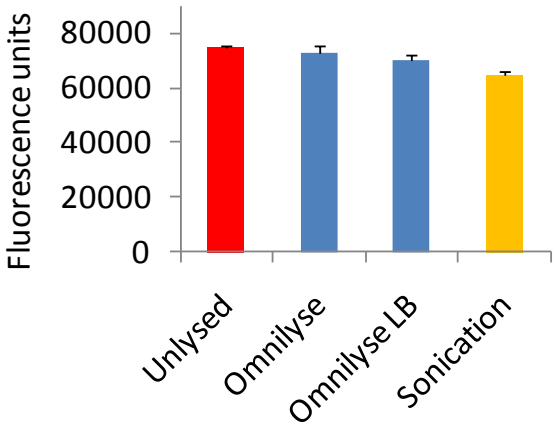

Figure 3. GFP fluorescence remains stabile during lysis. 6xHis-EmGFP fluorescence was measured at 487 nm (ex) and 507 nm (em). Lysed samples from OmniLyse™, OmniLyse™ low binding (LB) and sonication were compared.

Table 1. Analysis of 6xHis-EmGFP content in elution fractions purified using metal chelating resins after OmniLyse™ preparation .

Ni-resin	Yield (mg)	Purity
Company A	1.0	91%
Company B	1.1	87%

Contact Us to Order

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His-Purelyse®: providing rapid lysis and His-tagged protein purification in a single device

His-PureLyse® is a micro-scale, disposable device developed for rapid disruption of cells and the purification of His tagged proteins in a few minutes. By using this break-through technology, users are able to lyse and capture the tagged protein in a single step allowing for easy purification of the protein.

Sample preparation and purification

Escherichia coli (10 mL) culture, expressing 6xHis-EmGFP (Invitrogen), was pelleted at 1000xg for 5 minutes. The bacterial pellet was resuspended in 1 mL of lysis buffer (50 mM NaH_2PO_4 pH 7.5, 300 mM NaCl, 10 mM imidazole). The His-PureLyse™ device was equilibrated with 1 mL of lysis buffer. The resuspended bacteria were drawn into the syringe and the syringe was attached to the His-PureLyse™ and the device was turned on. The bacteria were slowly passed through the His-PureLyse™ and the lysate was collection in a 1.5 mL microfuge tube on ice. The bacterial lysate was drawn back through the device and the procedure was repeated for a total of 3 minutes. The device was turned off and the lysate was expelled from the device.

The device was washed with 5 mL of wash buffer (50 mM NaH_2PO_4 pH 7.5, 300 mM NaCl, 20 mM imidazole) with the device turned on and 1 mL fractions were collected. To elute the bound protein, 1 mL of elution buffer (50 mM NaH_2PO_4 pH 7.5, 300 mM NaCl, 250 mM imidazole) was passed through the running device and 200 µL fractions were collected. Samples were analyzed by SDS-PAGE (Figure 1).

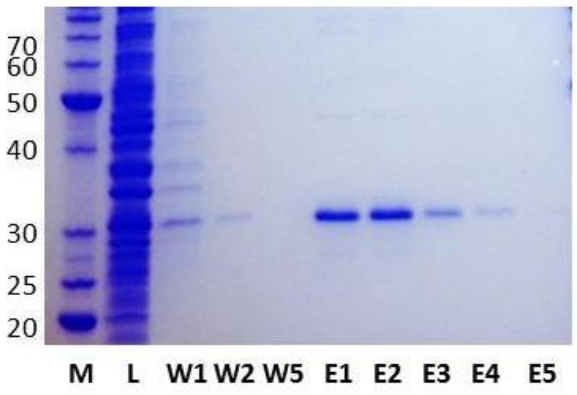

Figure 1. His-PureLyse® sample preparation expedites lysing and purifying Hi-tagged proteins from a sample to under 15 minutes. Bacteria expressing 6xHis-EmGFP were lysed or 3 minutes and in the His-PureLyse™ followed by wash and elution steps. The fractions were analyzed by SDS-PAGE and coomassie staining. M=marker, L=lysate, W=wash and E=elution.

[1] US and Intl. patents pending for OmniLyse® technology.

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