# Protein Extraction from Cells - ProteaBioSciences

The ProteaPrep following Cell Lysis Kits has been specially designed for the efficient recovery of purified protein from lysates of bacteria and mammalian cells. Because it is free of lysozyme and harsh detergents (e.g. SDS), the simple protocol permits recovery of a cell lysate that is free from artifactual protein contaminants and that contains soluble, native proteins for downstream characterization and biological testing.

## ■ ProteaPrep™ Cell Lysis Kit, Mass Spec Grade

*Alleviate concerns of standard detergents based methods (i.e. SDS): a chief advantage for proteomics analysis, ideal for MS !*

The proprietary formulation contains a mixture of salts, glycerol, and an acid labile surfactant (CMC: 1.9mM).
It is free of lysozyme and harsh detergents (e.g. SDS).

The unique included surfactant allows easy removal of detergents, a chief advantage for dowstream analysis such as MS: it alleviates the problems commonly associated with SDS and other detergents in proteomics studies.

After completing the cell lysis, the cell extract solution can be adjusted to a pH of 2.5 - 3 (by TFA, formic acid, etc.) and incubated for 10-20 minutes to fully cleave the AALS into small organic molecules that do not exhibit surfactant activity or interfere with downstream sample preparation and analysis by techniques such as mass spectrometry, enzymatic digestions, 2D gel electrophoresis, and protein quantitation (e.g. Bradford and Lowry assays).


Figure: Bacterial cells were lysed from BL21 E. coli strain using the ProteaPrep Cell Lysis Kit (#SP-810). Following degradation of the AALS II detergent, 40 µg of lysate was separated using isoelectric focusing on a pH 4-7 gradient. The sample was then separated by SDS-PAGE on a 10% ProteaGel (#PG-402D) and stained using Protea's Silver Stain Kit (#SS-100). Over 200 protein bands are clearly resolved on the gel.

## ■ ProteaPrep™ Bacterial and Mammalian Cell Lysis Kit

The ProteaPrep Lysis Buffer is a proprietary formulation containing a mixture of s nts that has been optimized for efficient solubilization, extraction, and recovery of mo

Prices and technical sheets on-line

**ProteaPrep Cell Lysis Kit**, for bacterial and mammalian **DO4440, 50ml** **DO4441, 5x50mL**
Contains 2 reagents – colorless liquid (A) and white film (B)

**ProteaPrep Cell Lysis Kit**, Mass spec Grade **DU1950, 10ml** **DU1951, 25mL**
Contains 10ml of AALS II, AALS reagetn A liquid, AALS reagetn B whit film cell Lysis Buffer and 10ml of 10X TBS solution)

Related product:

**ProteaPrep Protease Inhibitor Cocktail** DO4430, 5x1 ml of 10X
lyophilized powder, pack of 5 vials (reconstitute to 1mL of 10X concentrate per vial)

## ■ Acid Labile Surfactants (AALS)

*fully mass spec compatible and alleviate the problems commonly associated with the used of detergents in proteomics studies.*

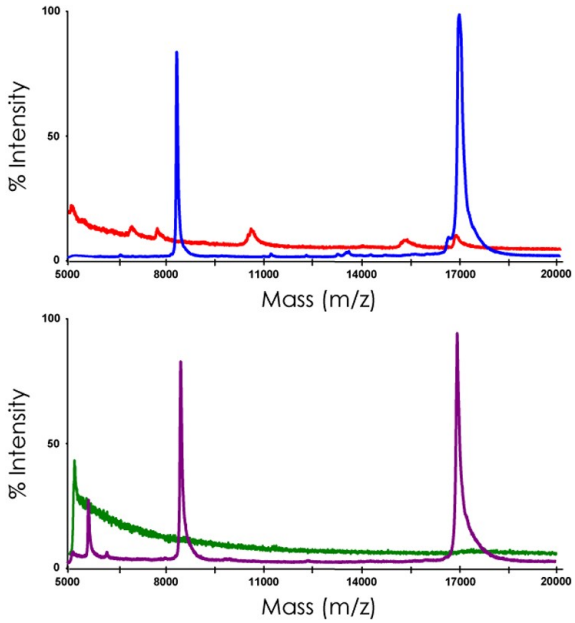
Progenta™ Acid Labile Surfactants are a new family of "smart surfactants" – novel, acid cleavable detergents that can be used in biological sample preparation, and then once their work is completed, the Progenta surfactants can be quickly and efficiently degraded by acidifying the sample solution. They provide a safe alternative to detergents (e.g. SDS and CHAPS) that are commonly used in proteomics work, but that negatively impact subsequent analysis by mass spectrometry. While SDS, CHAPS and other traditionally used detergents can improve protein solubility, they can be very difficult to remove during sample prep and purification of the protein sample. These bound detergents can cause significant impairment of protein analysis by mass spectrometry, as the surfactants can suppress analyte ion signal, promote analyte adduct formation, and present as contaminants during the analysis.

At neutral pH, the Progenta surfactants function as powerful detergents for use in sample preparation, protein solubilization, gel electroelution and cell lysis protocols. Buter after completing the experimental work, the solution is adjusted to a pH of 2.0 to 2.5 for 10 to 30 minutes to fully cleave the surfactants into small organic molecules that do not exhibit surfactant activity or interfere with analysis by mass spectrometry.

**Figure**: Excellent recovery and MS analysis of protein using AALS

The nice spectra of control pure myoglobin (blue) is affected dramatically using 0.1% SDS (red) as well as with 0.1% AALS (green) but an excellent signal is fully restored by acid treatment of AALS sample (purple: myoglobin with 0.1% AALS treated by acid for 10min).

Mass spectra of 20 pmol myoglobin samples that were C4 spotted onto a MALDI plate pre-spotted with CHCA MALDI matrix.




Both Progenta Anionic and Zwitterionic Acid Labile Surfactants are effective at solubilizing peptides and proteins, functioning in cell lysis protocols, optimizing enzymatic digestions, and reducing surface adsorption losses via non-specific interactions. Progenta Anionic Acid Labile Surfactants (AALS) have been engineered to replace SDS in experimental methods, and they can be additionally used in gel electroelution and anionic displacement studies. Progenta Zwitterionic Acid Labile Surfactants (ZALS) have been designed to replace CHAPS in sample preparation protocols, and they can be additionally used in the isoelectric focusing (IEF) step of 2D gel separations.

| Surfactant | Critical Micellular Concentration (CMC) | Recommended concentrations for usage |
|---|---|---|
| AALS I: | CMC = 7.7 mM | 0.01 - 2.0% |
| AALS II: | CMC = 1.9 mM | 0.01 - 2.0% |
| ZALS I: | CMC=3.4mM | 0.01 – 0.1% |
| ZALS II: | CMC=31.3mM | 0.01 – 0.1% |

| | | | |
|---|---|---|---|
| **Progenta™ Anionic Acid Labile Surfactant I (AALS I)** | **DZ6731, 5mg** | **DZ6732, 5x5mg** | **DZ6733, 10x5mg** |
| **Progenta™ Anionic Acid Labile Surfactant II (AALS II)** | **DZ6741, 5mg** | **DZ6742, 5x5mg** | **DZ6743, 10x5mg** |
| **Progenta™ Zwitterionic Acid Labile Surfactant I (ZALS I)** | **DZ6751, 5mg** | **DZ6752, 5x5mg** | **DZ6753, 10x5mg** |
| **Progenta™ Zwitterionic Acid Labile Surfactant II (ZALS II)** | | **DZ6761, 5mg** | **DZ6762, 5x5mg DZ6763, 10x5mg** |

## Related products lines

Interbiotec - BioSciences innovation – proposes a complete range of products for protein biochemistry.

Products HighLights Overview, including:

- FluoProbes labeling agents
- Desalting tools – CelluSep tubings, SpectraPor tubings, GebaFlex, FloatALyser, SlideALyser,...

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