Universal Lysis Buffer

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1. Product Description

Universal Lysis Buffer is a widely used lysis reagent for the non-denaturing lysis of tissues or cells, including samples from animals, plants (cells or tissues), and bacteria. The extracted protein samples can be used for experiments such as PAGE, Western Blot, Immunoprecipitation (IP), Co-immunoprecipitation (Co-IP), and pull-down assays.

1.1 Lysis Methods

Common lysis methods fall into two main categories: physical methods and chemical methods. Physical methods include ultrasonication, homogenization, grinding, and freeze-thaw cycles. Chemical methods include organic solvent lysis, acid-base detergent lysis, and lysozyme digestion. The advantage of chemical methods is that they are not limited by volume and can minimize the impact on the original sample. Among these, the lysozyme method is effective for lysing prokaryotic cells and most eukaryotic cells. The acid-base detergent method is fast and efficient, but its harsh conditions are not conducive to maintaining the native conformation of proteins; this method is most widely used in nucleic acid extraction. The Universal Lysis Buffer is designed for multiple sample types, utilizing mild surfactants and incorporating protein protectants to maintain the original molecular structures and protein-protein interactions.

1.2 Protein Protectants

The Universal Lysis Buffer contains glycerol and a variety of protease inhibitors and phosphatase inhibitors to protect protein stability during the lysis process. The phosphatase inhibitors include inhibitors for acidic, alkaline, and tyrosine/serine/threonine phosphatases. The protease inhibitors include inhibitors for metalloproteases, aminopeptidases, and serine/aspartic acid/cysteine proteases, serving as a non-toxic alternative to hazardous PMSF.

1.3 Storage Conditions

1）This product is a single-component solution. For short-term storage (up to 60 days), it can be kept at 2-8°C. For long-term storage, it can be stored at -20°C for one year. Avoid repeated freeze-thaw cycles.

2）The product is shipped at 2-8°C. Upon receipt, it can be aliquoted for storage. After thawing, mix thoroughly before use.

1.4Primary Applications

1）Rapid lysis of small-scale samples, suitable for subsequent experiments such as small-scale soluble protein identification for induced proteins, pull-down assays, and IP/Co-IP.

2）Rapid lysis of medium-scale samples, suitable for subsequent protein purification and characterization.

2.Instructions for Use

2.1 Extraction of Cellular Protein

2.1.1 Adherent or Suspension Cells

1）Adherent Cells: Remove the culture medium from the monolayer of cells. Wash 2-3 times with 1x PBS (to remove serum), then add trypsin for digestion (typically 1-5 minutes, some cell lines may require longer). Stop the digestion using serum or serum-containing medium. After resuspending the cells in 1x PBS, transfer them to a centrifuge tube.

Suspension Cells: Centrifuge the cell suspension at 2000 rpm, 4°C for 5 minutes. Discard the supernatant, collect the cell pellet, and gently rinse once with 1x PBS.

2）Centrifuge at 4000 rpm, 4°C for 10 minutes to collect the cells. Remove the supernatant and collect the pellet. Then, vortex briefly or flick the bottom of the tube gently to disperse the pelleted cells.

3）Resuspend the cells in Universal Lysis Buffer using 1 ml per 5x10^6 CHO or 293 cells.

4）Pipette up and down several times to ensure thorough contact between the lysis buffer and cells. Incubate on ice or at 4°C for 15 minutes to allow complete cell lysis.

2.1.2 Prokaryotic Cells

1）Take 1 ml of culture (with an OD600 between 1.0-1.2). Centrifuge at 4000 rpm, 4°C for 10 minutes. Remove the supernatant, resuspend the pellet in 1x PBS, and wash once.

2) Centrifuge again at 4000 rpm, 4°C for 10 minutes to collect the cells. Remove the supernatant and collect the pellet. Then, vortex briefly or flick the bottom of the tube gently to disperse the pelleted cells.

3) Add 200 µl of Universal Lysis Buffer and mix gently by vortexing. Incubate on ice or at 4°C for 15 minutes.

2.1.3 Yeast Cells

1) Pretreat the yeast cells using methods such as zirconia beads or glass bead milling (this step is essential and can enhance the lysis efficiency of the Universal Lysis Buffer on yeast cells).

2) Take 1 ml of yeast culture and centrifuge at 4000 rpm, 4°C for 10 minutes. Remove the supernatant, resuspend the pellet in 1x PBS, and wash once.

3) Centrifuge at 4000 rpm, 4°C for 10 minutes. Remove the supernatant, then briefly vortex or flick the bottom of the tube gently to disperse the pelleted yeast cells.

4) Add 200 µl of Universal Lysis Buffer and mix gently by vortexing. Incubate on ice or at 4°C for 15 minutes.

2.1.4 Protein Sample Collection

1) After complete lysis, centrifuge the sample at 10,000~14,000 × g for 3-5 minutes. Collect the supernatant.

2) Proceed with subsequent experiments such as PAGE, WB, IP, and Co-IP.

2.2 Extraction of Tissue Protein (Plant or Animal)

1) Quickly place the fresh tissue sample in pre-cooled physiological saline. Rinse several times to remove bloodstains. Blot the tissue surface dry with filter paper, then mince the tissue into fine pieces (this step helps the lysate become less transparent, indicating better lysis efficiency).

2) Prepare and label several microcentrifuge (EP) tubes. Weigh the empty tubes, add the tissue pieces, and weigh again. Add lysis buffer at a ratio of 200 µl per 20 mg of tissue. If lysis is incomplete, the amount of lysis buffer can be increased appropriately (not exceeding double the recommended volume). For higher protein concentration, the amount of lysis buffer can be reduced appropriately (not less than half the recommended volume).

3) Incubate on ice or at 4°C for 15 minutes.

4) Centrifuge at 10,000~14,000 × g for 3-5 minutes. Collect the supernatant for subsequent experiments such as PAGE, WB, IP, and Co-IP.

3.Precautions

3.1 It is recommended to aliquot the lysis buffer to avoid repeated freeze-thaw cycles. Please lyse samples on ice or at 4℃.

3.2 The protein lysate obtained contains substances that may interfere with the Bradford assay. It is recommended to use a BCA assay protein quantification kit to determine protein concentration.

3.3 If the lysate is viscous and no nucleic acid removal step is planned, the lysate can be diluted.

3.4 The lysis buffer contains glycerol and surfactants; therefore, concentration using dialysis is not recommended. Concentration can be achieved via chromatography columns or by reducing the lysis buffer-to-sample ratio.

3.5 For your safety and health, please wear a lab coat and disposable gloves during the experiment.

3.6 This product is for research use only.

4.Related Products

Product	Cat.No.	Size
Universal Lysis Buffer	BR0127-01	100ml
	BR0127-02	250ml