Easy-WESTERN-II Quick

Primary Antibody Detection Reagent for Western Blots

User Manual for Quick Antigen Detection or Multi Antigen Detection

Immediately after receiving the kit, read the section titled COMPONENTS AND STORAGE. It is IMPORTANT to store reagents under proper storage temperatures to prevent inactivation of reagents.

This manual is for the following kits:

Cat. #	Product Name	Components
BCL-EZQ21	Easy-WESTERN-II Quick basic	MAD reagent, Dilution buffer
BCL-EZQ22	Easy-WESTERN-II Quick Marker detector set	MAD reagent, Dilution buffer, Marker Detector
BCL-EZQ23	Easy-WESTERN-II Quick full set	MAD reagent, Dilution buffer, Mouse IgG Enhancer, Marker detector
BCL-EZQ24	Easy-WESTERN-II Quick Mouse enhancer set	MAD reagent, Dilution buffer, Mouse IgG Enhancer

The kit and its components are for **RESEARCH USE ONLY**, not for diagnostics or medical purposes.

INTRODUCTION

Easy-WESTERN (EZW) is a primary antibody detection reagent kit for Western blots. The kit is based on the Multi-Antibody Detection (MAD) technology. The MAD reagent are nano-size protein particles with high affinity to antibodies. Each particle is composed of about 100 antibody-binding proteins and is labeled with 50 HRP molecules. Because of these properties, MAD reagent enables high sensitivity and quick detection of primary antibodies.

The Easy-WESTERN kit is ideal for high sensitivity, signal enhancement, simultaneous detection of multi-antigens, and a quick one-step detection protocol that is not possible with standard Western blot techniques.

Advantages

1. No need for secondary antibody - MAD reagent can detect most primary antibodies*
2. Save time by using one-step detection method
3. Detect multi- antigens simultaneously using different primary antibodies
4. Simultaneously detect primary antibodies from different species

* MAD reagent may not work well with goat IgG. For best results use Mouse IgG Enhancer with mouse IgG1 primary antibodies. The performance of EZW depends on the type of antibody, and we do not warrant higher sensitivity in all cases.

COMPONENTS AND STORAGE

1. Multi-Antibody Detection (MAD) Reagent (250μL), store at -20°C immediately upon receipt and after every use.
2. 10x Dilution Buffer (60mL), store at 4°C after diluted
3. Marker Detection Reagent (50μL,kits BCL-EZS22, BCL-EZS23), store -20°C
4. Mouse Enhancer Reagent (250μL, kits BCL-EZS23, BCL-EZS24), store -20°C

Marker Detection Reagent and Mouse Enhancer Reagent are provided in an antifreezing solution, so that they do not freeze even at -20°C.

All components should be stored at the recommended temperatures to prevent inactivation.

REAGENTS NEEDED, NOT PROVIDED

1. TBS-T (150mM NaCl, 10mM Tris-HCl, 0.1% Tween-20, pH 7.6)
2. Distilled water
3. HRP substrate such as DAB for chromogenic detection or luminol-based for chemiluminescence

REAGENT PREPARATION

1. Prepare TBS-T or purchase ready made.
2. Dilute 10x Dilution Buffer 1:10 with distilled water. This will make a working stock of 1x Dilution Buffer for the MAD reagent.
3. Dilute the 1x Dilution Buffer 1:10 with TBS-T. This will make a working stock of 1/10x Dilution Buffer for the

primary antibody

4. To detect molecular weight markers that are typically detected by secondary antibodies such as MagicMark XP, use Marker Detector reagent provided with kits BCL-EZS02 and BCL-EZS03. Dilution instructions provided with each protocol below.
5. To enhance weak signals from mouse IgGs, such as IgG1, use the Mouse Enhancer reagent provided with kits BCL-EZS03 and BCL-EZS04. Dilution instructions provided with each protocol below.

   IMPORTANT: Signal may be reduced in cases where multiple antibodies are used with MAD reagent to probe membrane, which is caused by the binding competition of antibodies to MAD reagent. We recommend first running a test blot in order to get best dilution factors of antibodies in such cases.

ASSAY PROTOCOLS

STANDARD PROTOCOL

This method is for high sensitivity and strong signal.

1. Separate protein sample(s) using SDS-PAGE
2. Transfer protein to PVDF membrane
3. Block with blocking solution for 1 hour at room temperature (RT).
   a. Ordinary blocking reagents, such as BSA based, casein-based blocking solutions and skim milk solutions, are all compatible with the kit. If you use skim milk, it has to be at reagent grade. Skim milk may sometimes give weaker signals.
4. Wash membrane with TBS-T for 5 minutes. Repeat 2 more times for a total of 3 washes.
5. Incubate the membrane with primary antibody in 1/10x Dilution Buffer for 1 hr at RT. Primary antibody should be diluted to manufacturer's specifications.
6. Wash the membrane with TBS-T for 5 minutes. Repeat 2 more times for a total of 3 washes.
7. Dilute the MAD reagent 1:2,000 in 1x Dilution Buffer and incubate membrane in it for 1 hr at RT. To get stronger signals, use MAD reagent at a 1:1,000 dilution.
   a. If mouse IgG is used for the primary antibody, add the Mouse Enhancer reagent to the MAD containing Dilution Buffer at the volume of 1/2000 of the Dilution Buffer. The Mouse Enhancer reagent is included in kits BCL-EZS03 and BCL-EZS04,
   b. If molecular weight markers such as MagicMark XP are used, add the Marker Detector reagent to the MAD containing Dilution Buffer solution at the volume of 1/10000 of the Dilution Buffer. The Marker Detector reagent is included in kits BCL-EZS02 and BCL-EZS03.
8. Wash membrane with TBS-T for 5 minutes. Repeat 2 more times for a total of 3 washes.
9. Detect signal with commercially available HRP substrate.

QUICK PROTOCOL

This method is ideal when fast results are needed – 65 minute protocol.

1. Separate protein sample(s) using SDS-PAGE
2. Transfer protein to PVDF membrane
3. Block with blocking solution for 5 min at room temperature (RT).
    a. Ordinary blocking reagents, such as BSA based, casein-based blocking solutions and skim milk solutions, are all compatible with the kit. If you use skim milk, it has to be at reagent grade. Skim milk may sometimes give weaker signals.
4. Dilute the primary antibody and the MAD reagent in 1x Dilution Buffer. The primary antibody's dilution should follow the manufacturer's recommendation and the MAD reagent is diluted 1:2,000. If primary antibody contains NaN3, first dilute the antibody before mixing with the MAD reagent. Reduce the final concentration of NaN3 to be below 0.001%. The antibody/MAD solution is ready for use 5 minutes after preparation. This allows time for MAD and the antibody to interact before exposure to the membrane.
    a. If mouse IgG is used for the primary antibody, add the Mouse Enhancer reagent to the MAD containing Dilution Buffer at the volume of 1/2000 of the Buffer. The Mouse Enhancer reagent is included in kits BCL-EZS03 and BCL-EZS04.
    b. If molecular weight markers such as MagicMark XP are used, add the Marker Detector reagent to the MAD containing Dilution Buffer solution at the volume of 1/10000 of the Dilution Buffer. The Marker Detector reagent is included in kits BCL-EZS02 and BCL-EZS03.
5. Incubate the membrane for 30 min at RT. If higher sensitivity is desired, extend reaction time to 60 minutes.
6. Wash the membrane with TBS-T for 5 minutes. Repeat 4 more times for a total of 5 washes.
7. Detect signal with commercially available HRP substrate.

MULTI- ANTIGEN DETECTION PROTOCOL

This protocol is used to detect multiple antigens simultaneously.

1. Separate protein sample(s) using SDS-PAGE
2. Transfer protein to PVDF membrane
3. Block with blocking solution for 1 hour at room temperature (RT).
    a. Ordinary blocking reagents, such as BSA based, casein-based blocking solutions and skim milk solutions, are all compatible with the kit. If you use skim milk, it has to be at reagent grade. Skim milk may sometimes give weaker signals.
4. Wash membrane with TBS-T for 5 minutes. Repeat 4 more times for a total of 5 washes.
5. Incubate the membrane with primary antibodies in 1/10x Dilution Buffer for 1 hr at RT.
    a. Generally primary antibodies should be diluted to manufacturer's specifications. However, because each primary antibody may differ in its affinity to antigen protein, the dilution factor should be adjusted so that the multiple antibodies produce similar signal intensity.
6. Wash the membrane with TBS-T for 5 minutes. Repeat 4 more times for a total of 5 washes.
7. Dilute the MAD reagent 1:2,000 in 1x Dilution Buffer and incubate membrane in it for 1 hr at RT. To get stronger signals, use MAD reagent at 1:1,000 dilution..

a. If mouse IgG is used for the primary antibody, add the Mouse Enhancer reagent to the MAD containing Dilution Buffer at the volume of 1/2000 of the Dilution Buffer. The Mouse Enhancer reagent is included in kits BCL-EZS03 and BCL-EZS04.

a. If molecular weight markers such as MagicMark XP are used, add the Marker Detector reagent to the MAD containing Dilution Buffer solution at the volume of 1/10000 of the Dilution Buffer. The Marker Detector reagent is included in kits BCL-EZS02 and BCL-EZS03.

8. Wash the membrane with TBS-T for 5 minutes. Repeat 4 more times for a total of 5 washes.

9. Detect signal with commercially available HRP substrate.

TROUBLE SHOOTING

Problem	Possible Solutions
Weak signal	Increase antigen concentration
	Increase primary antibody concentration
	Increase the electric current or transfer time to improve protein transfer to membrane.
	Over blocking can reduce signal intensity. Reduce the blocking time or lower the concentration of blocking agents.
	Primary antibody is either mouse IgG or Goat IgG. Consider using kits BCL-EZQ03 or BCL-EZQ04 which contains Mouse Enhancer for improved signal detection of mouse IgG. EZQ kits do not work well with goat IgG.
	When diluting MAD Reagent in buffer without blocking agents, use low protein binding tubes.
White out of luminescent signal	Too much antigen or antibody. Too much signal inhibits luminescence. Reduce the concentration of antigen or antibody used.
Too many extra-bands	Non-specific binding of primary antibody. Reduced the antibody to appropriate concentration.
	Too much protein. Reduce the amount of protein in electrophoresis.
	Too high a concentration of MAD Reagent. Reduce MAD in reaction.
	Insufficient blocking. Block the membrane with 5% skim milk in TBS-T for over 1 hour
	MAD reagent is inactivated due to inappropriate storage. MAD Reagent should be stored at -20°C. Inactivated MAD can produce non-specific signals. Replace MAD Reagent.
High background	Insufficient washing. Increase the number and the duration of washes.
	Adequate signal but with high background, decrease primary antibody concentration and or decrease incubation time.
	Reduce the concentration of MAD Reagent.
	When using antigen-antibody reaction enhancers, insufficient washing causes high background. Increase the number and the duration of washes.
Weak signal of 1 antigen when using the Multi-Antigen Detection Protocol.	One primary antibody weakly binds to antigen or MAD Reagent. Increase the concentration of the primary antibody giving the weak signal.
	Insufficient washing of primary antibody. Increase the number and the duration of washes.
No signal with Quick Protocol	If using a non purified antibody such as serum, the Quick Protocol may not work well due to contaminating IgGs. Either use purified antibodies or Standard Protocol.

Related products

Product #	Product name	description
BCL-EZM01	Marker detector	for Easy-WESTERN Kits, 50 test
BCL-EZE01	Mouse IgG enhancer	for Easy-WESTERN kits, 50 test
BCL-EZB21	10x Dilution buffer	for Easy-WESTERN Kits, 60mL
BCL-125A	Signal Booster Solution A	Enhancer for antibody-antigen reaction, 250 mL