IMMUNOSET® αB-Crystallin ELISA development set

Catalog number: ADI-960-074
Reagents for 5 x 96 well ELISA kits

This IMMUNOSET® αB-Crystallin ELISA development set contains the basic components for the development of an αB-Crystallin enzyme-linked immunosorbent assay (ELISA). Each kit contains sufficient reagents for five 96-well plates.

This kit has been validated for use with cell lysates. Additional sample types will require validation by the user.

Visit www.enzolifesciences.com for tips and frequently asked questions.

Introduction

α-crystallins composed of ~20 kDa αA and αB subunits function as major water-soluble proteins accounting for almost 50% of total protein in the mammalian transparent eye lens, also existing in a variety of other tissues[1]. The α-crystallin proteins are members of the small heat shock protein (sHsp) family, as their expression can be induced by heat and other stress insults in a variety of organisms[2]. The α-crystallins possess structural and functional similarities and share sequence homology with Hsp25/27[3]. The conserved α-crystallin domain participates in oligomer assembly, which is critical to their function in the prevention of irreversible protein aggregation.

References:

1. Augusteyn, R.C., *et al*. (1998) Prog in Polymer Sci. **23**, 375-413.
2. Narberhaus, F. (2002) Microbiol Mol Biol Rev. **66**, 64-93.
3. Merck, K.B., *et al*. (1993) J Biol Chem. **268**, 1046-1052.
4. MacRae, T.H. (2000) Cell Mol Life Sci. **57**, 899-913.

Materials Provided

1. αB-Crystallin Capture Antibody

   One vial containing 156.25 µg lyophilized αB-Crystallin monoclonal antibody, Component #80-1934

2. αB-Crystallin Standard

   One vial containing 500 ng lyophilized natural αB-Crystallin protein, Component #80-1935

3. αB-Crystallin Detection Antibody

   One vial containing 31.25 µg lyophilized αB-Crystallin antibody, Component #80-1936

4. SA-HRP

   One vial containing 12.5 µg lyophilized streptavidin conjugated to horseradish peroxidase, Component #80-1896

Materials Needed but not Supplied

1. RIPA Cell Lysis Buffer, Cat. #80-1284, or similar
2. 96-well high-binding polystyrene microtiter plates, Cat. #80-1930, or similar
3. Precision pipets
4. Microplate reader capable of reading at 450 nm
5. Microplate shaker
6. Phosphate buffered saline (PBS)†
7. Tween®-20*†
8. Bovine Serum Albumin (BSA)†
9. 3,3',5,5' tetramethylbenzidine (TMB) solution, Cat. #80-1805 or similar†
10. 1N hydrochloric acid, such as Stop Solution 2, Cat. #80-1804†
11. Sucrose

† IMMUNOSET® Buffer Pack, Cat. #ADI-950-003,

*Tween is a registered trademark of ICL Americas

Buffer Formulations

1. Coating Buffer

   10 mM sodium phosphate, 15 mM NaCl, pH 7.4

2. Blocking Buffer

   10 mM sodium phosphate, 15 mM NaCl, 1.0% BSA, 1.0% sucrose, pH 7.4

3. Assay Buffer

   100 mM sodium phosphate, 150 mM NaCl, 1.0% BSA, 0.1% Tween-20, pH 7.4

4. Wash Buffer

   10 mM sodium phosphate, 15 mM NaCl, 0.1% Tween-20, pH 7.4

Plate Coating

1. Reconstitute αB-Crystallin Capture Antibody with 250 µL deionized water for a 250x stock. Use immediately, or make aliquots and freeze at -20°C for up to 3 months. For prolonged storage, aliquot and freeze at -80°C. Avoid repeated freeze/thaw cycles.
2. Dilute the stock 1:250 in Coating Buffer. Immediately dispense into 96-well microtiter plates using 100 µL of the diluted capture antibody per well. Seal the plate and incubate overnight at room temperature.
3. Aspirate each well to remove coating solution. Immediately add 200 µL Blocking Buffer per well. Seal the plate and incubate for at least 1 hour.
4. Aspirate each well to remove blocking solution. Allow the plate to dry before using. Once dried, store plate with desiccant at +4°C.

Reagent Preparation

1. Recombinant αB-Crystallin Standard

   Reconstitute αB-Crystallin Standard with 250 µL deionized water for a 50x stock. Aliquot and store at -20°C. For prolonged storage, aliquot and freeze at -80°C. Avoid repeated freeze/thaw cycles.

   The recommended standard curve range is 40 ng/mL to 1.25 ng/mL, using 2-fold serial dilutions in Assay Buffer. Do not store diluted standard.

2. αB-Crystallin Detection Antibody

   Reconstitute vial contents with 250 µL deionized water for a 250x stock. This solution may be stored at 4°C for up to 3 months. For prolonged storage, aliquot and freeze at -20°C. Avoid repeated freeze/thaw cycles. Reconstitute the Detection Antibody at the time of plate coating and wait at least one day before freezing; a moderate increase in low-end signal will be seen if not followed.

   Dilute the stock 1:250 in Assay Buffer for a working solution. Do not store diluted antibody.

3. SA-HRP

   Reconstitute vial contents with 250 µL deionized water for a 500x stock.

   Store at 4°C for up to 3 months, or aliquot and freeze at -20°C for prolonged storage. Avoid repeated freeze/thaw cycles.

   Dilute the stock 1:500 in Assay Buffer for a working solution. Do not store diluted conjugate.

Assay Procedure

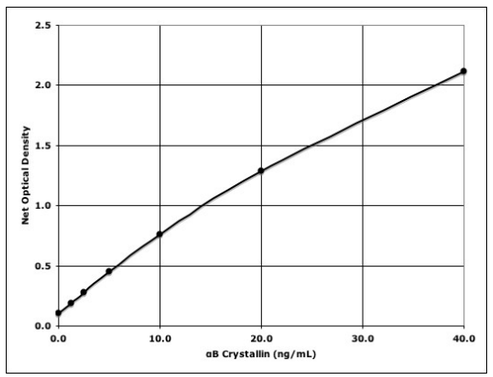
1. Pipet 100 µL of Assay Buffer into the control (0 ng/mL standard) wells.
2. Pipet 100 µL of standards and samples, prepared in Assay Buffer, to the bottom of the appropriate wells.
3. Seal the plate. Incubate for 1 hour on a plate shaker at room temperature.
4. Empty the contents of the wells and wash by adding 400 µL of Wash Buffer to every well. Repeat 3 more times for a total of 4 washes. After the final wash, empty or aspirate the wells and firmly tap the plate on a lint free paper towel to remove any remaining wash buffer.
5. Pipet 100 µL of the diluted detection antibody into each well, except the blank.
6. Seal the plate. Incubate for 1 hour on a plate shaker at room temperature.
7. Wash as above (Step 4).
8. Add 100 µL of the diluted conjugate to each well except the blank.
9. Seal the plate. Incubate for 30 minutes on a plate shaker at room temperature.

10. Wash as above (Step 4).
11. Pipet 100 µL of TMB solution into each well.
12. Seal the plate. Incubate for 30 minutes on a plate shaker at room temperature.
13. Pipet 100 µL 1N HCl into each well.
14. After blanking the plate reader against the substrate, read optical density at 450 nm. If the plate reader is not capable of adjusting for the blank, manually subtract the mean OD of the substrate blank from all readings.

Assay Performance

Typical Data

The results shown below are for illustration only and should not be used to interpret results from another assay.



Sensitivity

The sensitivity, or limit of detection, of this assay is 0.59 ng/mL. It was determined by interpolation at 2 standard deviations above the mean signal at background, using data from 5 standard curves.

Specificity

This assay detects human, mouse, rat, and bovine αB-Crystallin. Cross reactivity with γ-Crystallin and αA-Crystallin is 0.06% and 0.4%, respectively. There is no cross reactivity observed with β_L-Crystallin, Hsp10, Hsp25 and Hsp27.

Dilutional Linearity

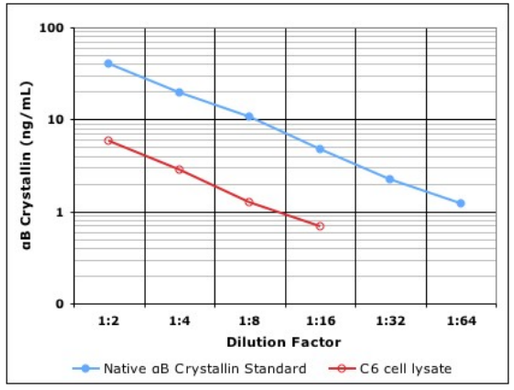
To determine possible interference from the sample matrix, the indicated sample types were serially diluted into assay buffer. The concentrations of αB-Crystallin were measured in the assay, and the results were analyzed to determine the range over which a linear response was obtained. These data may be used as a guideline to determine minimal recommended dilution (MRD) for similar samples.

Dilution Factor	HeLa CL	C6 CL	3T3 CL
1:2	32%	31%	40%
1:4	56%	67%	77%
1:8	92%	107%	101%
1:16	80%	103%	100%
1:32	100%	92%	---
1:64	---	100%	---

CL: Cell Lysate

Parallelism

Dose-response curves from cell lysates diluted into assay buffer (using the MRD) were compared to the recombinant αB-Crystallin standard curve. Parallelism indicates that the antibody-binding characteristics of the native and standard proteins are similar, allowing accurate determination of the analyte.



Calculation of Results

Several options are available for the calculation of the relative levels of αB-Crystallin in samples. We recommend that the data be handled by an immunoassay software package utilizing a 4 parameter logistic curve-fitting program. For accuracy, please ensure that sample values fall within the standard range.

Accessory Reagent List		
Reagent	Quantity	Cat. #
IMMUNOSET® Buffer Pack	1 each of the following products: 80-1927, 80-1928, 80-1929, 80-1805, 80-1804	ADI-950-003
IMMUNOSET® Plate Pack	5 96-well microtiter plates & 5 plate sealers	80-1930
PBS Concentrate	120 mL	80-1927
BSA Solution (10%)	50 mL	80-1928
Tween-20 Solution (10%)	30 mL	80-1929
RIPA Cell Lysis Buffer 2	100 mL	80-1284
Wash Buffer Concentrate	100 mL	80-1287
SA-HRP	12.5 µg/vial	80-1896

Storage

Store all components at +4°C. See page 3 for storage of reconstituted material.

Tips & Troubleshooting

- ✓ If buffers other than those recommended are used in the assay, the end-user must determine the appropriate dilution and assay validation.
- ✓ Pipet the reagents to the sides of the wells to avoid possible contamination.
- ✓ Pre-rinse each pipet tip with reagent. Use fresh pipet tips for each sample, standard, and reagent.
- ✓ Insufficient washing or residual wash buffer in the wells may cause variation in assay results.
- ✓ Bring all reagents to room temperature for at least 30 minutes prior to opening.
- ✓ All standards, controls, and samples should be assayed in duplicate.

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