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# β-lactamase (Human) ELISA Kit

*rev 03/20*

**(Catalog # E4347-100, 100 assays, Store at 4°C)**

## I. Introduction:

Extended spectrum beta-lactamase (ESBL) that inactivates beta-lactam antibiotics by hydrolyzing the amide group of the beta-lactam ring. Displays high levels of penicillinase and cephalosporinase activity as well as measurable activity with carbapenems, including imipenem and meropenem. Plays a primary role in the intrinsic resistance of M.tuberculosis to beta-lactam antibiotics. BioVision's β-lactamase ELISA kit is a sandwich ELISA assay for the quantitative measurement of human β-lactamase in serum, plasma and cell culture supernatants. The density of color is proportional to the amount of human β-lactamase captured from the samples.

## II. Application:

This ELISA kit is used for *in vitro* quantitative determination of β-lactamase.
Detection Range: 1.25 ng/ml – 40 ng/ml
Sensitivity: 0.1 ng/ml

## III. Specificity:

Human

## IV. Sample Type:

Serum, plasma, urine, cell culture samples, tissue samples.

## V. Kit Contents:

| Components | E4347-100 | Part No. |
|---|---|---|
| Micro ELISA strip-plate | 1 | E4347-100-1 |
| Standard (80 ng/ml) | 0.5 ml | E4347-100-2 |
| Standard diluent | 6 ml | E4347-100-3 |
| HRP- Conjugate reagent | 10 ml | E4347-100-4 |
| Sample diluent | 6 ml | E4347-100-5 |
| Chromogen Solution A | 6 ml | E4347-100-6 |
| Chromogen Solution B | 6 ml | E4347-100-7 |
| Stop Solution | 6 ml | E4347-100-8 |
| Wash buffer (20X) | 25 ml | E4347-100-9 |
| Plate sealers | 2 | E4347-100-10 |

## VI. User Supplied Reagents and Equipment:

- Microplate reader capable of measuring absorbance at 450 nm
- 37°C incubator
- Precision pipettes with disposable tips
- Distilled or deionized water
- Clean eppendorf tubes for preparing standards or sample dilutions
- Absorbent paper

## VII. Storage and Handling:

The entire kit may be stored at 4°C in dark for up to 6 months from the date of shipment. Avoid freeze-thaw cycles.

## VIII. Reagent Preparation:

Note: Prepare reagents within 30 minutes before the experiment. Before using the kit, spin tubes and bring down all components to the bottom of tubes.

1. **Wash Buffer**: Dilute the concentrated washing buffer (20X) with distilled water.
2. **Standard Preparation:**
   Ten wells are set for standards in a ELISA-plate. In Well 1 and Well 2, 50 µl Standard solution and 50 µl Standard Dilution buffer are added and mixed well. In Well 3 and Well 4, 50 µl solution from Well 1 and Well 2 are added respectively. Then 50 µl Standard Dilution buffer are added and mixed well. In Well 5 and Well 6, 50 µl solution from Well 3 and Well 4 are added respectively. Then 50 µl Standard Dilution buffer are added and mixed well. In Well 7 and Well 8, 50 µl solution from Well 5 and Well 6 are added respectively. Then 50 µl Standard Dilution buffer are added and mixed well. In Well 9 and Well 10, 50µl solution from Well 7 and Well 8 are added respectively. Then 50 µl Standard Dilution buffer are added and mixed well. 50 µl solution is discarded from Well 9 and Well 10.
   - Suggested standard concentration: 400 ng/ml, 20 ng/ml,10 ng/ml, 5 ng/ml and 2.5 ng/ml
3. **Sample Preparation:**

   Note: Sample extraction and ELISA assay should be performed as soon as possible after sample collection. If ELISA assay cannot be performed immediately, samples can be stored at -20°C. Avoid multiple freeze-thaw cycles. Samples with NaN3 should be avoided for this assay.

- **Serum**: After collection of the whole blood, allow the blood to clot by leaving it undisturbed at room temperature. This usually takes 10-20 minutes. Remove the clot by centrifuging at 2,000-3,000 rpm for 20 minutes. If precipitates appear during reservation, the sample should be centrifuge again.
- **Plasma**: Collect the whole blood into tubes with anticoagulant (EDTA or citrate). After incubated at room temperature for 10-20 minutes, tubes are centrifuged for 20 min at 2,000-3,000 rpm. Collect the supernatant carefully as plasma samples. If precipitates appear during reservation, the sample should be centrifuge again.
- **Urine**: Collect urine into aseptic tubes. Collect the supernatant carefully after centrifuging for 20 min at 2,000-3,000 rpm. If precipitates appear during reservation, the sample should be centrifuge again. The preparation procedure of cerebrospinal fluid and pleuroperitoneal fluid is the same as that of urine sample.
- **Cell Samples**: If you want to detect the secretions of cells, collect culture supernatant into aseptic tubes. Collect the supernatant carefully after centrifuging for 20 min at 2,000-3,000 rpm. If you want to detect intracellular components, dilute the cells to 1X100/ml with PBS (pH 7.2-7.4). The cells were destroyed to release intracellular components by repeated freezing and thawing. Collect the supernatant carefully after centrifuging for 20 min at 2,000-3,000 rpm. If precipitates appear during reservation, the sample should be centrifuge again.
- **Tissue Samples**: Tissue samples are cut, weighed, frozen in liquid nitrogen and stored at -80°C for future use. The tissue samples were homogenized after adding PBS (pH 7.4). Samples should be operated at 4℃. Collect the supernatant carefully after centrifuging for 20 min at 2,000-3,000 rpm. Aliquot the supernatant for ELISA assay and future use.
- End user should estimate the concentration of the target protein in the test sample first, and select a proper dilution factor to make the diluted target protein concentration fall in the optimal detection range of the kit.

## IX. Assay Protocol:

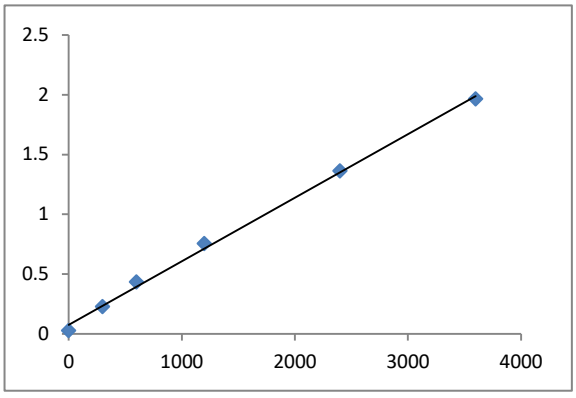
Note: Bring all reagents and samples to room temperature 30 minutes prior to the assay. It is recommended that all standards and samples be run at least in duplicate. A standard curve must be run with each assay.

1. Prepare all reagents, samples and standards as instructed in section VIII.
2. In sample wells, add 40 µl Sample dilution buffer and 10 µl samples are added (dilution factor is 5). Leave a well empty as blank control. Samples should be loaded onto the bottom without touching the well wall. Mix well with gentle shaking.
3. Incubate 30 min at 37°C after sealed with Closure plate membrane.
4. Remove plate sealer, aspirate and refill with the wash solution. Discard the wash solution after resting for 30 seconds and dry by gentle tapping.. Repeat the washing procedure for 5 times.
5. Add 100 µl HRP-Conjugate reagent to each well except the blank control well. Incubate 30 min at 37°C.
6. Washing as described in Step 4.
7. Add 50 µl Chromogen Solution A and 50 µl Chromogen Solution B to each well, mix with gently shaking and incubate at 37°C for 15 minutes. Please avoid light during coloring.
8. Add 50 µl stop solution to each well to terminate the reaction. The color in the well should change from blue to yellow.
9. Read absorbance O.D. at 450nm within 15 minutes after adding stop solution. The OD value of the blank control well is set as zero.

## X. CALCULATION:

Known concentrations of Human β-lactamase Standard and its corresponding reading OD is plotted respectively. The concentration of Human β-lactamase in sample is determined by plotting the sample's O.D. on the X-axis. The original concentration is calculated by multiplying the dilution factor.

**Figure**: Typical Standard Curve: These standard curves are for demonstration only. A standard curve must be run with each assay.




## XI. RELATED PRODUCTS:

- Beta-Lactamase Activity Colorimetric Assay Kit (Cat. No. K803)
- CENTA β-lactamase substrate (Cat. No. 2394)
- EZScreen™ Beta-Lactamase Activity Colorimetric Assay Kit (384-well) (Cat. No. K954)
- Beta-Lactamase Inhibitor Screening Kit (Colorimetric) (Cat. No. K804)
- Nitrocefin (Cat. No. 2388)
- Timentin (Cat. No. B1508)