

(FOR RESEARCH USE ONLY. DO NOT USE IT IN DIAGNOSIS!)

Cat No.: EKF1038

## Beta-adrenergic agonists ( $\beta$ -agonists) ELISA Kit

If you have any questions or need further help during experiment, please don't hesitate to contact us through the following methods:

|                       |                          |
|-----------------------|--------------------------|
| ✉ Email (Order)       | order@enkilife.com       |
| ✉ Email (Techsupport) | techsupport@enkilife.com |
| ☎ Tel:                | 0086-27-87002838         |
| 🌐 Website:            | www.enkilife.com         |

**Shelf life:** Please refer to the label on the outer package.

**Techsupport:** In order to provide you with better service, please inform us the lot number on the label of the outer package.

### Product description

This ELISA kit is rapid, quantitative enzyme-linked immunosorbent assays (ELISA) for the determination of Beta-adrenergic agonists content in Food samples.

## Key Features

- Sensitivity: 0.05 ppb (ng/mL)
- Detection range: 0.05 ppb~4.05 ppb
- Specificity:

|              |      |
|--------------|------|
| Clenbuterol  | 100% |
| Bambuterol   | 175% |
| Mabuterol    | 130% |
| Brombuterol  | 88%  |
| Clenproperol | 75%  |
| Cimbuterol   | 41%  |
| Cimaterol    | 20%  |

- Detection limits:

|                             |          |
|-----------------------------|----------|
| Pig urine                   | 0.4 ppb  |
| Cow urine, pork, beef, lamb | 0.5 ppb  |
| Feed                        | 10.0 ppb |

- Recovery rate: 90%±30%

## Storage and Shelf Life

The kit should be stored at 2~8°C and must not be frozen. The shelf life of this product is 1 year. Do not use the kit beyond the expiration date.

## Test Principle

This assay employs the competitive inhibition enzyme immunoassay technique. The kit consists of an enzyme-labeled plate pre-coated with coupled antigens, horseradish enzyme markers, antibodies, standard substances, and other supporting reagents. During detection, standard substances or sample solutions are added. Beta-adrenergic agonists in the samples competes with the pre-coated coupled antigens on the enzyme-labeled plate for Beta-adrenergic agonists specific antibody. After adding the enzyme markers, TMB substrate is used for color development. The absorbance value of the sample is negatively correlated with the content of Beta-adrenergic agonists it contains, and the residual amount of Beta-adrenergic agonists in the sample can be obtained by comparing with the standard curve.

## Materials Supplied

| Item                        | Quantity   |
|-----------------------------|------------|
| Assay Plate                 | 96T        |
| Standard                    | 6 x 1.5 mL |
| HRP Conjugate               | 1 x 6 mL   |
| Antibody                    | 1 x 6 mL   |
| TMB Substrate Reagent (A\B) | 2 x 7 mL   |
| Stop Solution               | 1 x 7 mL   |
| Feed diluent                | 1 x 30 mL  |
| Wash Buffer (20×)           | 1 x 25 mL  |
| Plate Sealer                | 1 piece    |
| Instruction Manual          | 1 piece    |
| Sealed Bag                  | 1 copy     |

## Standard Concentration

| Standard                          | 1 | 2    | 3    | 4    | 5    | 6    |
|-----------------------------------|---|------|------|------|------|------|
| Concentration<br>(ppb=ng/mL=ng/g) | 0 | 0.05 | 0.15 | 0.45 | 1.35 | 4.05 |

## Materials Required, Not Supplied

- Instruments: Microplate reader, printer, homogenizer, nitrogen blow-drying device, vortex, centrifuge, constant temperature incubator, balance (sensitivity 0.01g)
- Single-channel micropipette (20 µL-200 µL, 100 µL-1000 µL)
- 300 µL multichannel micropipette
- Reagents: Trichloroacetic acid, Concentrated hydrochloric acid, Sodium hydroxide
- Distilled or deionized water

### ① Notes:

- Before using the kit, read the instructions carefully.
- Do not use expired kits, and do not mix reagents in kits with different batch numbers.
- Kindly use graduated containers to prepare the reagent.
- Bring all reagents to room temperature (20-25°C) before use for 30 min.
- Only the disposable tips can be used for the experiments and the tips must be changed when used for different reagents.
- Distilled water is recommended to be used to make the preparation for reagents. Contaminated water or container for reagent preparation will influence the detection result.

- The stop solution is acidic. Wear eyes, hands, face, and clothing protection when using the product.
- EnkiLife is only responsible for the kit itself, but not for the samples consumed during the assay. The user should calculate the possible amount of the samples used in the whole test. Please reserve sufficient samples in advance.
- If the samples are not indicated in the manual, a preliminary experiment to determine the validity of the kit is necessary.
- Please predict the concentration before assaying. If values for these are not within the range of the standard curve, users must determine the optimal sample dilutions for their particular experiments.

## Reagent Preparation

- **Wash Buffer (1x):** If crystals have formed in the concentrate, warm up to room temperature and mix gently until the crystals have completely dissolved. Dilute 10 mL of Wash Buffer (20x) into 190 mL deionized or distilled water to prepare 200 mL of Wash Buffer (1x). Keep it at 4 °C for one month.
- **0.5 M sodium hydroxide:** Weigh 2 g of sodium hydroxide, dissolve it in deionized water and make up to 100mL.
- **0.5% trichloroacetic acid:** Weigh 1 g of trichloroacetic acid and dissolve it thoroughly in 200 mL of deionized water.
- **0.1 M hydrochloric acid solution:** Measure 0.86mL of concentrated hydrochloric acid and add deionized water to make up to 100mL.
- **1 M sodium hydroxide:** Weigh 4 g of sodium hydroxide, dissolve it in deionized water and make up to 100mL.

## Sample Preparation and collection

The prepared sample may be stored for up to one day at 4°C.

**Pig urine:** Take 50 µL of urine sample directly for analysis. Dilution factor of sample: 1

**Cow urine:** Take 100 µL of urine sample into centrifuge tube, add 200 µL of deionized water, and vortex thoroughly for 10s. Take 50 µL of sample for further analysis. (If the urine sample is turbid, it can be filtered or centrifuged at 4000 rpm for 5 min and take the supernatant for further analysis) Dilution factor of sample: 3.

**Pork, beef, lamb:** Weigh  $1 \pm 0.05$  g of homogenized sample into 50 mL centrifuge tube, add 3 mL of **0.5% trichloroacetic acid**, high-speed vortex for 1 min. Centrifuge at 4000 rpm for 5 min. Transfer 1 mL of the intermediate solution into a new centrifuge tube. Add 40 µL of **0.5 M sodium hydroxide solution**, vortex well for 10s. Centrifuge at 4000 rpm for 5 min. Take 50 µL of sample for further analysis. Dilution factor of sample: 4.

**Feed:** Weigh  $1 \pm 0.05$  g of homogenized sample into 50 mL centrifuge tube, add 9 mL of **0.1M hydrochloric acid solution**, high-speed vortex for 1 min. Centrifuge at 4000 rpm for 5 min. Transfer 1 mL of the supernatant into a new centrifuge tube. Add 50  $\mu$ L of **1 M sodium hydroxide solution**, vortex well for 10s. Centrifuge at 4000 rpm for 5 min. Take 100  $\mu$ L of the supernatant into a new centrifuge tube, add 400  $\mu$ L of the **Feed diluent**, and vortex thoroughly for 30s. Take 50  $\mu$ L of sample for further analysis. Dilution factor of sample: 50.

## Assay Protocol

### Notes:

- Take the required reagent out of the refrigerated environment at 4°C and place it at room temperature for more than 30 min. If the reagent is crystalline, allow it to dissolve sufficiently at room temperature. Shake each liquid reagent well before use.
- It is recommended that all standards and samples be run at least in duplicate.
- Remove the required number of assay plates, put the unused assay plates in sealed bags, and store at 4°C.
- Avoid using metal packaging and stirring reagents.
- Mix the liquid well and complete removal of liquid at each step is essential to good performance.
- Discard the substrate with any color that indicates the degeneration of this solution. When the absorbance value of 0ppb standard less than 0.5 indicates its degeneration.
- The sample addition time for each step shall not exceed 3 min.

1、 **Number:** The corresponding microwells of the sample and the standard are numbered in sequence, and each sample and standard are parallel to each well with 2 wells, and the location of the standard well and the sample well is recorded.

2、 **Start the reaction:** Add 50  $\mu$ L of **Standard** or **Sample** per well to the respective microwells, then add 50  $\mu$ L of **HRP Conjugate** per well, followed by 50  $\mu$ L of **Antibody** to each well. Cover the assay plate with a plate sealer, gently shake for 5 s to mix well, and react in the dark at 25 °C for 30 min.

3、 **Washing:** Carefully remove the plate sealer, discard the liquid in the plate wells. Wash by filling each well with 350  $\mu$ L of **Wash Buffer (1X)** using a squirt bottle, multi-channel pipette, manifold dispenser, or auto washer, and let it stand for 30s. Aspirate or decant the liquid in the plate wells, pat it dry against clean absorbent paper, and complete one wash. Repeating the process 5 times.

Tips: After the plate wells is dried, the next step should be carried out immediately.

4、 **Add Substrate Reagent:** Add 50 µL of **Substrate solution A** to each well, then add 50 µL of **Substrate Reagent B**, gently shake for 5s to mix well. Incubate for 15 min at 25°C. Protect from light.

Tips: Adjust the incubation time according to the color change, but do not exceed 30 min. Once the standard wells show a clear gradient, the incubation can be stopped.

5、 **Stop the reaction:** Add 50 µL of **Stop Solution** to each well, gently tap the plate to ensure thorough mixing.

6、 **Measure the OD value:** Determine optical density (OD) result at 450 nm within 10 min. (Recommend reading the OD value at the dual-wavelength: 450/630 nm).

## 📍 Calculation of results

### 1、 Calculation of percent absorbance:

The percent absorbance of the standard or sample is equal to the average of the percent absorbance value of the standard or sample (double well) divided by the absorbance value of the first standard (0 ppb), multiplied by 100%.

$$\text{percent absorbance (\%)} = \frac{A}{A_0} \times 100\%$$

A—The average absorbance value of the standard or sample solution


A<sub>0</sub>—Average absorbance value of 0 ppb standard

### 2、 Create of standard curve:

Take the percentage absorbance of the standard substance as the Y-axis and the logarithm of the corresponding standard substance concentration (ppb) as the X-axis to plot the semi-logarithmic curve of the standard substance. The percentage absorbance of the sample is substituted into the standard curve, and the concentration corresponding to the sample is read out from the standard curve, and multiplied by its corresponding dilution factor to get the actual concentration of the analyte in the sample. Substitute the percentage absorbance of the sample into the standard curve, read the concentration corresponding to the sample from the standard curve, and multiply it by the corresponding dilution factor to obtain the actual concentration of the analyte in the sample.

### 3、Standard curve reference

| Standard                          | 1     | 2     | 3     | 4     | 5     | 6     |
|-----------------------------------|-------|-------|-------|-------|-------|-------|
| Concentration<br>(ppb=ng/mL=ng/g) | 0     | 0.05  | 0.15  | 0.45  | 1.35  | 4.05  |
| OD Standard                       | 1.916 | 1.652 | 1.150 | 0.626 | 0.213 | 0.062 |

 We are always committed to providing high-quality products and thank you for your understanding and support. If you have any questions, please feel free to contact our technical support team.