



Technical Manual

TER (Terbutaline) ELISA Kit

- Catalogue Code: FSES0063
- Competitive ELISA Kit
- Research Use Only

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1. Key features and Sample Types

Sensitivity:

0.1 ppb (ng/mL)

Assay Procedure:

25°C, 30 min~15 min

Detection Limit:

Serum, Urine - 0.5 ppb; Muscle, Liver - 1 ppb

Cross Reactivity:

Terbutaline	100%
Salbutamol	121%
Penbutolol	<0.1%
Fenoterol	<0.1%
Zilpaterol	<0.1%
Ractopamine	<0.1%
Dopamine Hydrochloride	<0.1%
Formoterol	<0.1%
Clenbuterol	<0.1%
Tulobuterol	<0.1%

Sample Recovery rate:

90%±30%.

Storage:

2-8°C for 6 months.

Expiry:

See Kit Label

2. Storage

Store the kit at 2~8°C. Do not freeze any test kit components.

Return any unused microwells to their original foil bag and reseal them together with the desiccant provided and further store at 2 - 8°C.

3. Test Principle

This kit uses a Competitive-ELISA method. It can detect Terbutaline (TER) in samples, such as muscle, serum, etc. This kit is composed of ELISA Microtiter plate, HRP conjugate, standard and other supplementary reagents. The microtiter plate provided in this kit has been pre-coated with coupled antigen. During the detection, TER in the samples or standard competes with coupled antigen on the solid phase supporter for sites of anti-TER antibody. Then Horseradish Peroxidase (HRP) conjugate is added to each well, and substrate reagent is added for color development. There is a negative correlation between the OD value of samples and the concentration of TER. The concentration of TER in the samples can be calculated by comparing the OD of the samples to the standard curve.

4. Kit Contents

Each kit contains reagents for 96 assays including:

No.	Component	96-WellKit
1	ELISA Microtiter Plate	96 wells
2	Standards	1 mL each (0 ppb, 0.1 ppb, 0.3 ppb, 0.9 ppb, 2.7 ppb, 8.1 ppb)
3	Sample Diluent	30 mL
4	11xConcentrated HRP Conjugate	1 mL
5	HRP Conjugate Diluent	10 mL
6	Substrate Reagent A	6 mL
7	Substrate Reagent B	6 mL
8	Stop Solution	6 mL
9	20xConcentrated Wash Buffer	25 mL
10	Plate Sealer	3 pieces
11	Sealed Bag	1 piece
12	Manual	1 copy

Note: All reagent bottle caps must be tightened to prevent evaporation and microbial pollution.

Additional materials required:

Other materials required but not supplied

- **Instrument:** Microplate reader, Vortex mixer, Water Bath, Centrifuge, Balance (sensitivity 0.01 g).
- **Micropipette:** Single channel (20-200 μ L, 100-1000 μ L), Multichannel (30-300 μ L).
- **Reagents:** Trichloroacetic Acid ($C_2HCl_3O_2$), NaOH

5. Experimental Preparation

Bring all reagents and samples to room temperature before use.

Open the microplate reader in advance, preheat the instrument, and set the testing parameters.

1. Sample pre-treatment Notice:

Experimental apparatus should be clean, and the pipette should be disposable to avoid cross- contamination during the experiment.

2. Solution preparation

Please prepare solution according to the number of samples. Don't use up all components in the kit at once!

Solution 1: Tissue Diluent (for livestock, liver sample)

Dissolve 1 g of **Trichloroacetic Acid** with 100 mL of deionized water, mix fully.

Solution 2: 0.5 M NaOH Solution (for livestock, liver sample)

Dissolve 2 g of **NaOH** to 100 mL with deionized water, mix fully.

Solution 3: Wash Buffer

Dilute **20×Concentrated Wash Buffer** with deionized water.

(20×Concentrated Wash Buffer (V): Deionized water (V) = 1:19).

Solution 4: HRP Conjugate

Dilute **11×Concentrated HRP Conjugate** with **HRP Conjugate**

Diluent. (11× Concentrated HRP Conjugate (V): HRP Conjugate Dilution (V) = 1:10).

Note: Please use immediately, it cannot be stored.

3. Sample pre-treatment procedure

Targets may be distributed unevenly, resulting in no detection. To avoid this, ensure to take sufficient samples when sampling.

3.1 Pre-treatment of serum (cattle, sheep) sample:

1. Take 200 μ L of serum into centrifuge tube;
Note: Avoid hemolysis while taking blood. Take the supernatant for detection after Centrifuge if the serum is cloudy.
2. Add 200 μ L of **Sample Diluent** and vortex for 2 min;
3. Incubate at 80°C for 5 min in water bath;
4. Restore samples to room temperature, and take 40 μ L for detection.
Note: Sample dilution factor: 2, detection limit: 0.5 ppb

3.2 Pre-treatment of muscle (livestock), liver sample:

1. Weigh 2 ± 0.05 g of homogenate sample into a 50 mL centrifuge tube;
2. Add 3 mL of **Wash Buffer** (Solution 3), then add 3 mL of **Tissue Diluent** (Solution 1) and fully vortex for 1 min;
3. Centrifuge for 5 min at 4000 r/min;
4. Take 1 mL of mediate layer clear liquid into a new centrifuge tube;

Note: Avoid taking the upper and lower solid, otherwise it will affect the test results.

5. Add 40 µL of **0.5 M NaOH Solution** (Solution 2), and fully vortex for 10s to mix thoroughly;
6. Centrifuge for 5 min at 4000 r/min;
7. Take 40 µL for detection.

Note: Sample dilution factor: 4, detection limit: 1 ppb

3.3 Pre-treatment of muscle (swine)* sample:

(*Data validated in swine muscle but pre-treatment can be applied for muscle samples of multiple species.)

1. Take 50 µL of clear urine sample for analysis directly (if the urine sample is muddy, it should be filtered or centrifuged at 4000 r/min for 5 min until the urine sample become clear). Samples temporarily not used should be frozen.
2. Take 40 µL for detection.

Note: Sample dilution factor: 1, minimum detection limit: 1 ppb

6. Assay Procedure

Bring all reagents and samples to room temperature (25°C) before use. All the reagents should be mixed thoroughly by gently swirling before pipetting. Avoid foaming. The unused ELISA Microtiter plate should be sealed as soon as possible and stored at 2~8°C.

1. **Number:** number the sample and standard in order (multiple well), and keep a record of standard wells and sample wells. **Standard and Samples must be tested in duplicate.**
2. **Add Sample:** add 40µL of **Standard or Sample** per well, add 80 µL of **HRP Conjugate** (Solution 4) into each well. Gently vortex for 10s to mix thoroughly and cover the plate with plate sealer. Incubate at 25°C for 30 min away from direct sunlight.
3. **Wash:** uncover the sealer carefully, remove the liquid in each well. Immediately add 260 µL of **Wash Buffer** (Solution 3) to each well and wash. Repeat the wash procedure for 4 times, 30s intervals/time. Invert the plate and pat it against absorbent paper (If bubbles exist in the wells, clean tips can be used to prick them).
4. **Colour Development:** add 50 µL of **Substrate Reagent A** to each well, and then add 50 µL of **Substrate Reagent B**. Gently vortex for 10s to mix thoroughly. Incubate at 25°C for 15 min away from direct sunlight (The reaction time can be extended according to the actual colour change).
5. **Stop Reaction:** add 50 µL of **Stop Solution** to each well, vortex gently for 10s to mix thoroughly.
6. **OD Measurement:** determine the optical density (OD value) of each well at 450 nm (reference wavelength 630 nm) with a microplate reader. This step should be finished in 5 min after stop reaction.

7. Data Analysis

1. Absorbance (%) = $A/A_0 \times 100\%$

A: Average absorbance of standard or sample

A_0 : Average absorbance of 0 ppb Standard

2. Drawing and calculation of standard curve

Create a standard curve by plotting the absorbance percentage of each standard on the y-axis against the log concentration on the x-axis to draw a semi-logarithmic plot. Add average absorbance value of sample to standard curve to get corresponding concentration.

If samples have been diluted, the concentration calculated from the standard curve must be multiplied by the dilution factor.

For this kit, it is more convenient to use professional analysis form for accurate and fast analysis of batch samples.

8. Notes

1. The overall OD value will be lower when reagents have not been brought to room temperature before use or room temperature is below 25°C.
2. If the wells turn dry during the washing procedure, it will lead to bad linear standard curve and poor repeatability. Operate the next step immediately after wash.
3. Mix thoroughly and wash the plate completely. The consistency of wash procedure can strongly affect the reproducibility of this ELISA kit.
4. ELISA Microtiter plate should be covered by plate sealer. Avoid the kit to strong light.
5. **Each reagent is optimized for use in the FSES0063. Do not substitute reagents from any other manufacturer into the test kit. Do not combine reagents from other FSES0063 with different lot numbers.**
6. Substrate Reagent should be abandoned if it turns blue colour. When OD value of standard (concentration: 0) < 0.8 unit (A_{450nm} < 0.8), it indicates the reagents are deteriorated.
7. Stop solution is caustic, avoid contact with skin and eyes.
8. As the OD values of the standard curve may vary according to the conditions of the actual assay performance (e.g. operator, pipetting technique, washing technique or temperature effects), the operator should establish a standard curve for each test.
9. Even the same operator might get different results in two separate experiments. In order to get reproducible results, the operation of every step in the assay should be controlled.
10. If the samples are not indicated in the manual, a preliminary experiment to determine the validity of the kit is necessary.
11. The kit is used for rapid screening of actual samples. If the test result is positive, the instrument method such as HPLC, LC/MS, etc. can be used for quantitative confirmation.

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