# Technical Manual

# TMP (Trimethoprim) ELISA Kit

- Catalogue Code: FSES0018
- Competitive ELISA Kit
- Research Use Only

# Contents

# 1. Key features and Sample Types

**Sensitivity:**

0.015 ppb (ng/mL)

**Assay Procedure:**

37°C, 45 min～15 min

**Detection Limit:**

Feed - 0.8 ppb; Muscle---0.2 ppb; Serum, Urine---0.2 ppb

**Cross Reactivity:**

Trimethoprim - 100%, Sulfapyridine - < 0.1%, Sulfadiazine - < 0.1%, Sulfisoxazole - < 0.1%, Sulfathiazole - < 0.1%, Sulfamerazine - < 0.1%, Sulfadoxine - < 0.1%,

**Sample Recovery rate:**

Feed - 85%±10%; Serum, Urine - 85%±10%; Muscle - 85%±15%

**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 Trimethoprim (TMP) in samples, such as muscle, feed, etc. This kit is composed of ELISA Microtiter plate, HRP conjugate, standard liquid and other supplementary reagents. The microtiter plate in this kit has been pre-coated with antibodies. During the reaction, TMP in the samples or standard competes with Horseradish Peroxidase (HRP) conjugate for sites. Add substrate reagent is added for color development. There is a negative correlation between the OD value of samples and the concentration of TMP. The concentration of TMP 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<br>(0 ppb, 0.015 ppb, 0.045 ppb, 0.135 ppb, 0.405 ppb, 1.215 ppb) |
| 3 | HRP Conjugate | 5.5 mL |
| 4 | Substrate Reagent A | 6 mL |
| 5 | Substrate Reagent B | 6 mL |
| 6 | Stop Solution | 6 mL |
| 7 | 20×Concentrated Wash Buffer | 40 mL |
| 8 | 2×Reconstitution Buffer | 50 mL |
| 9 | Plate Sealer | 3 pieces |
| 10 | Sealed Bag | 1 piece |
| 11 | 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**

- **Instruments:** Microplate reader, Printer, Homogenizer, Nitrogen evaporators, Water bath, Vortex mixer, Centrifuge, Graduated pipette, Balance (sensitivity 0.01 g).
- **Micropipette:** Single channel (20-200 μL, 100-1000 μL), Multichannel (30-300 μL).
- **Reagents:** Anhydrous methanol, N-hexane, NaOH, Concentrated HCl.

# 5. Experimental Preparation

Bringall 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**

Solution 1: Reconstitution Buffer

Dilute the **2×Reconstitution Buffer** with deionized water. (2×Reconstitution Buffer (V): Deionized water (V) =1:1). The Reconstitution buffer can be stored at 4°C for a month.

Solution 2: 0.1 M HCl Solution *(for feed sample)*

Dilute 10 mL of **Concentrated HCl** to 1200 mL with deionized water, mix fully.

Solution 3: 1 M NaOH Solution *(for feed sample)*

Dissolve 4g of **NaOH** to 100 mL with deionized water, mix fully.

Solution 4: Wash buffer

Dilute **20×Concentrated Wash Buffer** with deionized water. (20×Concentrated Wash Buffer (V): Deionized water (V) = 1:19).

**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 feed sample:**

1. Weigh 2±0.05 g of homogenate sample into 50 mL centrifuge tube. Add 20 mL of **0.1 M HCl Solution** (Solution 2), vortex for 15 min, centrifuge at 3000 r/min for 10 min at room temperature.
2. Take 1 mL of the supernatant to a clean 1.5 mL centrifuge tube, add about 70 μL of **1 M NaOH Solution** (Solution 3), adjust pH to 6-8 (the volume of 1 M NaOH can be adjusted according to different sample), mix fully. Centrifuge at 3000 r/min for 10 min at room temperature.
3. Take 0.5 mL of the supernatant to another 1.5 mL centrifuge tube, add 0.5 mL of **Reconstitution Buffer** (Solution 1), mix fully.
4. Take 50 μL of for analysis.

**Note: Sample dilution factor: 20, detection limit: 0.8 ppb**

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

1. Weigh 2±0.05 g of homogenate sample that without fat into 50 mL centrifuge tube. Add 6 mL of
   **Anhydrous methanol** and 2 mL of **N-hexane**, vortex fully for 5 min.

2. Centrifuge at 4000 r/min for 10 min at room temperature, discard the upper layer N-hexane, take 0.5 mL of lower layer liquid to a clean test glass (avoid touching fat layer).
3. Dry at 50-60°C with nitrogen evaporators or water bath.
4. Add 400 μL of **Reconstitution Buffer** ((Solution 1) and 500 μL of **N-hexane**, vortex fully for 1 min at maximum speed.
5. Transfer the mixed solution to a 1.5 mL centrifuge tube, centrifuge at 4000 r/min for 5 min at room temperature. Discard the upper layer N-hexane.
6. Take 50 μL of lower layer liquid for analysis.

**Note: Sample dilution factor: 5, detection limit: 0.2 ppb**

### 3.3 Pre-treatment of serum, urine (swine)* sample:

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

1. Take 0.5 mL of sample, centrifuge at 4000 r/min for 5 min at room temperature.
2. Take 50 μL of supernatant, add 200 μL of **Reconstitution Buffer** (Solution 1) and mix fully.
3. Take 50 μL for analysis.

**Note: Sample dilution factor: 5, detection limit: 0.2 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 teste in duplicate.**
2. **Add Sample:** add 50 μL of **Standard or Sample** per well, then add 50 μL of **HRP Conjugate** to each well, cover the plate with sealer, vortex for 5s to mix thoroughly, incubate at 37°C for 45 min away from direct sunlight.
3. **Wash:** uncover the sealer carefully, remove the liquid in each well. Immediately add 300 μL of **Wash Buffer** (Solution 4) to each well and wash. Repeat wash procedure for 5 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 5s to mix thoroughly. Incubate at 37°C for 15 min away from direct sunlight (The reaction time may be shortened or prolonged according to the depth of the colour).
5. **Stop Reaction:** add 50 μL of **Stop Solution** to each well. Gently vortex 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 10 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 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 on a large number of 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 FSES0018. Do not substitute reagents from any other manufacturer into the test kit. Do not combine reagents from other FSES0018 with different lot numbers.**
6. Substrate Reagent should be abandoned if it turns blue colour. When OD value of standard (concentration: 0) < 0.5 unit (A450nm < 0.5), 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.

**Assay Genie 100% money-back guarantee!**

If you are not satisfied with the quality of our products and our technical team cannot resolve your problem, we will give you 100% of your money back.

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