






QUALICHEK™ Ciprofloxacin ELISA

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Ver 1.0

RUO

Quantitative testing of Ciprofloxacin in samples, such as honey, animal tissues, milk, eggs, etc.

RUO	For Research Use Only	REF	Catalog Number
	Store At	LOT	Batch Code
	Manufactured By		Biological Risk
	Expiry Date		Consult Operating Instructions

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Introduction:

Ciprofloxacin is an antibiotic used to treat a number of bacterial infections. This includes bone and joint infections, intra abdominal infections, certain type of infectious diarrhea, respiratory tract infections, skin infections, typhoid fever, and urinary tract infections, among others.

Intended Use:

This kit is for quantitative testing for Ciprofloxacin in sample, such as honey, animal tissues, milk, eggs, etc.

Principle:

This kit uses Indirect-Competitive-ELISA as the method. It can detect CPFX in samples, such as such as honey, animal tissues (chicken, pork, fish, and shrimp) milk, eggs, etc. This kit is composed of ELISA Microtiter plate, HRP conjugate, antibody, standard and other supplementary reagents. The microplate provided in this kit has been pre-coated with CPFX antigen. During the reaction, CPFX in the samples or standard competes with CPFX antigen on the solid phase supporter for sites of CPFX antibody. Then Horseradish Peroxidase (HRP) conjugate is added to each micro plate well, and TMB substrate is for color development. There is a negative correlation between the OD value of samples and the concentration of CPFX. The concentration of CPFX in the samples can be calculated by comparing the OD of the samples to the standard curve.

Materials Provided:

1. Coated Microtiter plate - 1x 96 wells
2. Standards Liquid -1mL each (0ppb, 0.1 ppb, 0.3 ppb, 0.9 ppb, 2.7 ppb, 8.1 ppb)
3. High Concentrated Standard (100 ppb) - 1mL
4. HRP Conjugate - 5.5 mL
5. Antibody Working Solution - 5.5 mL
6. Substrate A - 6 mL
7. Substrate B - 6 mL
8. Stop Solution - 6 mL
9. Wash Buffer (20X) - 40 mL
10. Plate Sealer - 3 pieces

Material required but not provided:

Instrument: Microtiter plate reader, Printer, Homogenizer, Nitrogen Evaporators/Water bath, Oscillators, centrifuge, Graduated pipette, Balance (sensitivity 0.01 g)

High-precision transferpettor: single channel (20-200 μ L, 100-1000 μ L), Multichannel (300 μ L) micropipettes.

Reagents: Anhydrous acetonitrile, N-hexane, Concentrated hydrochloric acid (HCl), Dichloromethane

Storage Information:

1. Store main kit components at 2-8°C Avoid freeze / thaw cycles.
2. Before using, bring all components to room temperature (18-25°C). Upon assay completion return all components to appropriate storage conditions.

Sample pretreatment:

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 pretreatment Notice:

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

2. Solution preparation:

Solution 1: 0.15 M HCl Solution: Add 5 mL of concentrated hydrochloric acid (HCl) with deionized water to a final volume of 400 mL and mix fully.

Solution 2: Sample Extraction Solution: Add 10 mL of 0.15 M HCl to 90 mL of anhydrous acetonitrile and mix fully.

Solution 3: Reconstitution Buffer: Dilute the 5×Reconstitution Buffer with deionized water. (5×Reconstitution Buffer (V): Deionized water (V)=1:4). The Reconstitution buffer can be stored at 4°C for a month.

Solution 4: Wash Buffer: Dilute 20×Concentrated Wash Buffer with deionized water. (20×Concentrated Wash Buffer (V): Deionized water (V) = 1:19).

3. Sample pretreatment procedure:

Pretreatment of animal tissue sample:

1. Weigh 2 ± 0.05 g of tissue homogenate into a 50 mL centrifuge tube.
2. Add 8 mL of solution 2 and oscillate for 5 min. Centrifuge at 4000 r/min for 10 min at room temperature.
3. Remove 2 mL of the clear upper organic layer solution to a clean and dry glass tube, dry at 50-60°C with Nitrogen Evaporators/Water bath.
4. Add 1 mL of N-hexane and oscillate for 2 min. Then add 1 mL of Reconstitution buffer (solution 3) and oscillate for 30 sec to mix fully. Centrifuge for 5 min at 4000 r/min at room temperature.
5. Discard the upper organic phase, take 50 μ L of the lower layer solution for analysis.

Note: Sample dilution factor: 2, minimum detection dose: 0.3 ppb

Pretreatment of honey sample:

1. Weigh 1 ± 0.05 g of honey into a 50 mL centrifuge tube, add 6 mL of solution 2 and oscillate for 5 min to dissolve thoroughly.
2. Add 3 mL of solution 3 and 11 mL of dichloromethane, oscillate for 5 min. Then centrifuge at 4000 r/min for 5 min at room temperature.
3. Discard the supernatant and transfer 8 mL of the lower layer solution to a dry test tube. Dry at 50-60°C with Nitrogen Evaporators/Water bath.
4. Dissolve the residue with 1 mL of Reconstitution buffer. Add 1 mL of N-hexane and oscillate for 30 sec. Centrifuge at 3000 r/min for 5 min at room temperature.
5. Discard the upper organic phase, take 50 μ L of the lower layer solution for analysis.

Note: Sample dilution factor: 2, minimum detection dose: 0.4 ppb

Pretreatment of milk sample:

1. Take 25 μ L of milk to 475 μ L of solution 3, oscillate for 1 min to dissolve fully.
2. Take 50 μ L for detection and analysis.

Note: Sample dilution factor: 20, minimum detection dose: 3 ppb

Pretreatment of milk powder sample:

1. Weigh 0.5 ± 0.02 g of homogenate sample into a centrifuge tube, add 5 mL of deionized water and oscillate to dissolve fully.
2. Mix 100 μ L of sample solution with 400 μ L of Reconstitution buffer (solution 3) and oscillate for 1 min.
3. Take 50 μ L for detection and analysis.

Note: Sample dilution factor: 50, minimum detection dose: 6 ppb

Pretreatment of eggs sample:

1. Weigh 1 ± 0.02 g of homogenate egg into a centrifuge tube, add 5 mL of deionized water and oscillate to dissolve fully.
2. Mix 100 μ L of sample solution with 400 μ L of Reconstitution buffer (solution 3) and oscillate for 1 min.
3. Take 50 μ L for detection and analysis.

Note: Sample dilution factor: 30, minimum detection dose: 3 ppb

Assay procedure:

Centrifuge the sample again after thawing before the assay. Bring all reagents to room temperature for 30 min before use. **All the reagents should be mixed thoroughly by gently swirling before pipetting. Avoid foaming.**

1. **Number:** number the sample and standard in order (multiple well), and keep a record of standard wells and sample wells.
2. **Add sample:** add 50 µL of Standard or Sample per well, then add 50 µL of HRP conjugate to each well, then add 50 µL of antibody working solution, cover the plate with sealer, oscillate for 5 s gently to mix thoroughly, incubate for 45 min at 25°C.
3. **Wash:** uncover the sealer carefully; remove the liquid in each well. Immediately add 300 µL of wash buffer to each well and wash. Repeat wash procedure for 5 times, 30 s intervals/time. Invert the plate and pat it against thick clean absorbent paper (If bubbles exist in the wells, clean tips can be used to prick them).
4. **Color Development:** add 50 µL of Substrate Reagent A to each well, and then add 50 µL of Substrate Reagent B. Gently oscillate for 5 s to mix thoroughly. Incubate shading light for 15 min at 25°C (The reaction time may be shortened or prolonged according to the depth of the color).
5. **Stop reaction:** add 50 µL of stop solution to each well, oscillate gently to mix thoroughly.
6. **OD Measurement:** determine the optical density (OD value) of each well at 450 nm with a microplate reader (the 450/630 nm double wavelength is recommended). This step should be finished in 10 min after stop reaction.

Judgment of result:

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

A: Average absorbance of standard or sample

A₀: Average absorbance of 0 ppb Standard

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 software for accurate and fast analysis on a large number of samples.

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 reagents to strong light.
5. Do not use expired kit or reagents of different batches.
6. TMB should be abandoned if it turns color. When OD value of standard (concentration: 0) < 0.5 unit (A450nm < 0.5), it indicates the reagent may be deteriorated.
7. Stop solution is caustic; avoid contact with skin and eyes.

Technical specification:

Sensitivity: 0.1 ppb (ng/mL)

Reaction mode: 25°C, 45 min~15 min

Detection limit: Tissue (chicken, pork, fish, shrimp) ---0.3 ppb, Honey ---0.4 ppb, Milk---3 ppb, Milk powder---6 ppb, Eggs---3 ppb.

Reactivity: Ciprofloxacin---100%, Oxolinic acid---28%, Levofloxacin---10%,
Lomefloxacin---4%, Marbofloxacin---4%, Sarafloxacin---2%

Sample recovery rate: Tissue, Honey, Milk, Milk powder, Eggs---85%±15%.

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