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**MEL (Melamine) ELISA Kit**

Catalog No: E-FS-E010

96T/96T\*3

<b>Version Number:</b>	V1.2
<b>Replace version:</b>	V1.1
<b>Revision Date:</b>	2024.03.14

This manual must be read attentively and completely before using this product.

If you have any problems, please contact our Technical Service Center for help.

Toll-free: 1-888-852-8623 Tel: 1-832-243-6086 Fax: 1-832-243-6017

Email: [techsupport@elabscience.com](mailto:techsupport@elabscience.com)

Website: [www.elabscience.com](http://www.elabscience.com)

Please kindly provide us the lot number (on the outside of the box) of the kit for more efficient service.

## Test principle

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

## Technical indicator

**Reaction mode** (Incubation time and temperature): 25°C; 30 min, 15 min.

**Detection limit:** Milk powder---40 ppb; Milk---54 ppb; Milk, Milk powder (method 2) ---2 ppb;  
Muscle, Liver ---4 ppb; Feed---200 ppb; Eggs---40 ppb; Serum---8 ppb.

**Cross-reactivity:** Melamine---100%; Cyanuric Acid---60%; s-Triazine---< 1%.

**Sample recovery rate:** Milk, Milk powder---90 ± 20%; Muscle, Feed---85 ± 20%; Eggs---80 ± 20%.

## Kits components

Item	Specifications
ELISA Microtiter plate	96 wells
Standard Liquid	1 mL each (ppb=ng/mL=ng/g) (0 ppb, 2 ppb, 6 ppb, 18 ppb, 54 ppb, 162 ppb)
HRP Conjugate	5.5 mL
Antibody Working Solution	5.5 mL
Substrate Reagent A	6 mL
Substrate Reagent B	6 mL
Stop Solution	6 mL
20×Concentrated Wash Buffer	40 mL
2×Reconstitution Buffer	50 mL
Plate Sealer	3 pieces
Sealed Bag	1 piece
Manual	1 copy

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

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## Other materials required but not supplied

**Instruments:** Microplate reader, Printer, Homogenizer, Nitrogen evaporators, Water bath, Oscillators, Centrifuge, Graduated pipette, Balance (sensitivity 0.01 g).

**Micropipette:** Single channel (20-200  $\mu\text{L}$ , 100-1000  $\mu\text{L}$ ), Multichannel (30-300  $\mu\text{L}$ ).

**Reagents:** N-hexane, Acetonitrile, NaOH, Concentrated HCl, Methanol.

## 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. FOR RESEARCH USE ONLY. ELISA Microtiter plate should be covered by plate sealer. Avoid the kit to strong light.
5. **Each reagent is optimized for use in the E-FS-E010. Do not substitute reagents from any other manufacturer into the test kit. Do not combine reagents from other E-FS-E010 with different lot numbers.**
6. Substrate Reagent should be abandoned if it turns blue color. When OD value of standard (concentration: 0) < 0.5 unit ( $A_{450\text{nm}} < 0.5$ ), it indicates the reagent be 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. **For mentioned sample fast and efficient extraction methods are included in the kit description. Please consult technical support for the applicability if other sample need to be tested.**
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.

## Storage and expiry date

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.

**Expiry date:** expiration date is on the packing box.

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## Experimental preparation

Restore 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 disposable 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: 1 M HCl Solution (*for feed sample*)

Dilute 8.6 mL of **Concentrated HCl** to 100 mL with deionized water.

Solution 2: 0.1 M NaOH Solution

Dissolve 0.4 g of **NaOH** to 100 mL with deionized water.

Solution 3: Acetonitrile-0.1 M NaOH Solution

*(for milk, milk powder, livestock, fish, shrimp, liver, eggs, serum sample)*

Mix 84 mL of **Acetonitrile** and 16 mL of **0.1M NaOH Solution** (Solution 2) fully.

Solution 4: 1 M NaOH Solution (*for feed sample*)

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

Solution 5: Reconstitution Buffer

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

Solution 6: Wash Buffer

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

### 3. Sample pretreatment procedure

#### 3.1 Pretreatment of milk sample:

- (1) Take 600 µL of milk sample into 2 mL centrifuge tube and add 1 mL **Acetonitrile**, vortex until it mixed fully. Centrifuge at 4000 rpm for 5 min.
- (2) Take 100 µL of supernatant and add 900 µL of **Reconstitution Buffer** (Solution 5), mix fully.
- (3) Take 50 µL for analysis.

**Note: Sample dilution factor: 27, detection limit: 54 ppb**

#### 3.2 Pretreatment of milk powder sample:

- (1) Weigh  $2 \pm 0.05$  g of milk powder sample into 50 mL centrifuge tube, add 4 mL of **Methanol**, vortex until it mixed fully. Centrifuge at 4000 rpm for 10 min.
- (2) Take 100 µL of supernatant and add 900 µL of **Reconstitution Buffer** (Solution 5). Mix fully.
- (3) Take 50 µL for analysis.

**Note: Sample dilution factor: 20, detection limit: 40 ppb**

**3.3 Pretreatment of milk, milk powder sample (method 2) sample:**

- (1) Take 2 mL of milk sample or 2 g of milk powder sample into a centrifuge tube.
- (2) Add 8 mL of **Acetonitrile-0.1 M NaOH Solution** (Solution 3) and vortex fully for 2 min. Centrifuge at 4000 rpm for 10 min. Take 4 mL of the supernatant liquid and dry at 50-60°C with nitrogen evaporators or water bath (Please do it in a ventilated environment).
- (3) Add 1 mL of **N-hexane** to dissolve the remaining dry material, then add 1 mL of **Reconstitution Buffer** (Solution 5). Vortex for 30 s and centrifuge to remove the upper layer n-hexane phase.
- (4) Take 50 µL of the lower layer liquid for analysis.

**Note: Sample dilution factor: 1, detection limit: 2 ppb**

**3.4 Pretreatment of muscle (livestock, fish, shrimp), liver sample:**

- (1) Remove fat from sample. Homogenize the representative sample with a homogenizer and mix fully.
- (2) Weigh  $2 \pm 0.05$  g of homogenate muscle sample into a 50 mL centrifuge tube.
- (3) Add 8 mL of **Acetonitrile-0.1 M NaOH Solution** (Solution 3) and vortex fully for 2 min. Centrifuge at 4000 rpm for 10 min. Take 2 mL of the upper layer liquid and dry at 50-60°C with nitrogen evaporators or water bath (Please do it in a ventilated environment).
- (4) Add 1 mL of **N-hexane** to dissolve the remaining dry material, then add 1 mL of **Reconstitution Buffer** (Solution 5). Vortex for 30 s and centrifuge to remove the upper layer n-hexane phase.
- (5) Take 50 µL of the lower layer liquid for analysis.

**Note: Sample dilution factor: 2, detection limit: 4 ppb**

**3.5 Pretreatment for feed sample:**

- (1) Homogenize the representative sample with a homogenizer and mix fully.
- (2) Weigh  $2 \pm 0.05$  g of crushed feed sample into a centrifuge tube. Add 2 mL of **1 M HCl Solution** (Solution 1) and 16 mL of deionized water, then homogenate the sample. Vortex for 5 min to mix fully.
- (3) Centrifuge at 4000 rpm for 15 min. Take 10 mL of the supernatant and adjust the pH to 6-8 with **1 M NaOH Solution** (Solution 4). (The added amount of 1 M NaOH Solution is different according to the feed sample. The needed amount is generally between 0.5 mL-1 mL).
- (4) Centrifuge at 4000 rpm for 15 min. Take the supernatant to another centrifuge tube (It is recommended to increase the centrifuge speed or filter the supernatant with filter paper if the supernatant is muddy).
- (5) Dilute the supernatant for 10 times with the **Reconstitution Buffer** (Solution 5) (Take 100 µL of supernatant and add 900 µL of **Reconstitution Buffer**, mix fully).
- (6) Take 50 µL for analysis.

**Note: Sample dilution factor: 100, detection limit: 200 ppb**

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**3.6 Pretreatment for eggs sample:**

- (1) Homogenate the egg sample with homogenizer to mix fully.
- (2) Weigh  $2 \pm 0.05$  g of homogenate egg sample into centrifuge tube. Add 8 mL of **Acetonitrile- 0.1 M NaOH Solution** (Solution 3) and vortex fully for 2 min. (After adding the Acetonitrile-0.1M NaOH Solution to vortex, it may be jelly, which is normal).
- (3) Centrifuge at 4000 rpm for 10 min at room temperature. Take 1 mL of the upper layer liquid and dry at 50-60°C with nitrogen evaporators or water bath (Please do it in a ventilated environment).
- (4) Add 1 mL of **N-hexane** to dissolve the remaining dry material, and then add 1 mL of **Reconstitution Buffer** (Solution 5). Vortex fully for 30 s and centrifuge to remove the upper layer n-hexane phase.
- (5) Take 50  $\mu$ L of the lower layer liquid to another centrifuge tube and add 150  $\mu$ L of **Reconstitution Buffer** (Solution 5), mix fully for 30 s.
- (6) Take 50  $\mu$ L for analysis.

**Note: Sample dilution factor: 20, detection limit: 40 ppb**

**3.7 Pretreatment for serum (swine) sample:**

- (1) Take 0.5 mL of sample into a 50 mL centrifuge tube.
- (2) Add 2 mL of **Acetonitrile- 0.1 M NaOH Solution** (Solution 3) and vortex for 2 min. Centrifuge at 4000 rpm for 10 min. Take 1 mL of the upper layer liquid to another centrifuge tube and dry at 50-60°C with nitrogen evaporators or water bath.
- (3) Add 1 mL of **N-hexane** to dissolve the remaining dry material, then add 1 mL of **Reconstitution Buffer** (Solution 5). Vortex for 30 s and centrifuge to remove the upper layer n-hexane phase.
- (4) Take 50  $\mu$ L of the lower layer liquid for analysis.

**Note: Sample dilution factor: 4, detection limit: 8 ppb**

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## Assay procedure

Restore 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 need test in duplicate.**
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 plate sealer, oscillate for 5 s gently to mix thoroughly, incubate at 25°C for 30 min in shading light.
3. **Wash:** uncover the sealer carefully, remove the liquid in each well. Immediately add 300 µL of **Wash Buffer** (Solution 6) 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 at 25°C for 15 min in shading light (If the blue is too shallow, the reaction time can be prolonged appropriately).
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 (reference wavelength 630 nm) with a microplate reader. This step should be finished in 10 min after stop reaction.



## Result analysis

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

A: Average absorbance of standard solution or sample

$A_0$ : Average absorbance of 0 ppb Standard solution

### 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 the 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.

**Melamine (E-FS-E010) Standard Curve**

