# Data Sheet

# Zearalenone (ZEN) ELISA Kit

**Cat. #ELA008**

**Size: 96 Wells**

## Principle and Application

This kit adopts the method of indirect competitive enzyme-linked immunoassay (ELISA) to detect Zearalenone (ZEN, also known as F-2 mycotoxin), in the sample such as grains and feed. The kit is composed of Microtiter Plate coated with coupled antigens, HRP conjugate, antibodies, standards and other supporting reagents. During the detection, with adding standards or samples, the ZEN in the samples will compete with the coupled antigens to combine with anti-ZEN antibodies. After adding HRP conjugate, take coloration with TMB substrates. Absorbance value of the samples is a negative correlation with ZEN content. Lastly, by comparing the obtained absorbance values with the standard curve, we can calculate the content of ZEN toxin in the sample.

## Storage conditions

- The kit shall be stored at 2-8 ℃. Avoid freezing.
- Shelf Life: 12 months. The date of manufacture is presented in the label of the box.

### Technique Data

- Kit Sensitivity: 0.1ppb (ng/mL)
- Reactive Mode: 25℃, 30min～15min
- Detection Limits:

| Sample | Detection Limits |
|---|---|
| Cereal and their food raw materials | 2 ppb |
| Feed and feed raw materials | 6 ppb |
| Samples with strong water absorption (Corn husk, wheat bran, etc.) | 6 ppb |

- Cross-reaction Rate:

Zearalenone ……100%

Zearalanone ……..13%

Zearalanol …… <1%

- Sample Recovery Rate:

| Sample | Recovery Rate |
|---|---|
| Cereals and their food raw materials | 90±15% |
| Feed and feed raw materials | 80±15% |
| Samples with strong water absorption (Corn husk, wheat bran, etc.) | 80±15% |

**Composition of the Kit**

| Reagent | Specification |
|---|---|
| Microtiter Plate | 8wells× 12strips |
| Standard: 0ppb, 0.1ppb, 0.3ppb, 0.9ppb, 2.7ppb, 8.1ppb (black cap) | 1.0mL each |
| Antibody solution (blue cap) | 1×5.5mL |
| HRP conjugate (red cap) | 1×5.5mL |
| Substrate Reagent A (white cap) | 1×6mL |
| Substrate Reagent B (black cap) | 1×6mL |
| Stop Solution (yellow cap) | 1×6mL |
| Concentrated Wash Buffer (20×)(white cap) | 1×40mL |
| Instruction | 1 |
| Adhesive Membrane | 1 |
| Sealed bag | 1 |

## Materials Required but Not Supplied

- **Equipment:** microplate reader, printer, grinder (for homogenizing solid samples), vortex mixer (for shake and mix), centrifuge, graduated transfer pipette, and balance with a division value of 0.01 g, constant temperature device;
- **Micropipette:** single-channel (20-200μL, 100-1000μL), and multi-channel 300μL;

- **Reagents:** methanol.

**Experimental preparation**

***Restore all reagents and samples to room temperature (adjust to around 25°C) for more than 30 min before use. This is a crucial step to ensure there is no precipitation in the reagents.***

Please note that the labware must be clean. Use disposable pipette tips to avoid contamination of interference results.

◆ **Solution preparation:**

**Solution 1:** Sample Extraction Solution

90% Methanol solution, (Methanol/Deionized water= 9: 1.)

**Solution 2:** Working Wash Buffer

Dilute the concentrated wash buffer (20×) by a factor of 20 (Concentrated wash buffer/Deionized water= 1: 19).

◆ **Sample pretreatment steps:**

**1. Cereal (Low-fat content such as rice, corn, millet, etc.) and their food raw materials.**

1) Weigh 2g±0.05g of homogenized samples into a 50mL centrifuge tube, pipette 8mL of **Sample Extraction Solution (Solution 1)**, shake them for 5min and centrifuge at 4000 rpm at room temperature for 10min.

2) Take 0.5mL of supernatant, add 2mL of deionized water, and shake thoroughly.

3) Take out 50μL for test.

***Dilution times of the sample:20 Detection limits: 2ppb***

**2. Feed and feed raw materials.**

1) Weigh 2g±0.05g of homogenized samples into a 50mL centrifuge tube, pipette 8mL of **Sample Extraction Solution (Solution 1)**, shake them for 5min and centrifuge at 4000 rpm at room temperature for 10min.

2) Take 0.5mL of supernatant, add 1mL of **Sample Extraction Solution (Solution 1)**, and shake thoroughly.

3) Take 0.5mL of mixture, add 2mL of deionized water, and shake thoroughly.

4) Take out 50μL for test.

***Dilution times of the sample:60 Detection limits: 6ppb***

**3. Samples with strong water absorption (such as corn husk and bran) treatment.**

1) Weigh 2g±0.05g of homogenized samples into a 50mL centrifuge tube, pipette 24mL of **Sample Extraction Solution (Solution 1)**, shake them for 5min and centrifuge them at 4000 rpm at room temperature for 10min.

2) Take 0.5mL of supernatant, add 2mL of deionized water, and mix fully.

3) Take out 50μL for test.

***Dilution times of the sample:60 Detection limits: 6ppb***

## ELISA procedure

Place all reagents and samples to room temperature (adjust to around 25°C) for 30min. Gently shake the reagent bottles before use.

Take out the frame of the microplate along with the required number of wells. Then place the unused microplate wells into the sealed bag with the desiccant provided. Store the remaining kit in the refrigerator at 2-8°C.

**Step 1:** Number: Number the wells in sequence corresponding to the samples and standard, make 2-well parallel trials for each sample and standard, and record their locations.

**Step 2:** Incubation: Add 50μL of **standard or sample** into each numbered well, then add 50μL of **HRP conjugate** per well. Next, add 50μL of **antibody solution** per well. Finally, cover the Microtiter Plate with the **adhesive membrane**, shake gently by hand (or use a microplate shaker) for 5s and incubate for 30 min at 25℃.

**Step 3:** Washing: Uncover the adhesive membrane carefully, remove the liquid, pipette 350μL of **Working Wash Buffer (Solution 2)** to every well, let stand for 30 seconds then drain, repeat 5 times. Invert the plate and tap it against a thick absorbent paper (or lint-free cloth), with a soft towel placed underneath. (Bubbles that are not removed after patting dry can be punctured with a clean pipette tip).

**Step 4:** Color: Add 50μL of **Substrate Reagent A** to each well, then add 50μL of **Substrate Reagent B** per well. Shake gently by hand (or use a microplate shaker) for 5s, and allow to react for 15min at 25℃ in the dark. (The reaction can be extended appropriately if the blue colour is too pale.)

**Step 5:** Stop the reaction: Pipette 50μL of **Stop Solution** to each well, shake gently by hand (or use a microplate shaker) for 5s. The reaction would be stopped.

**Step 6:** Calculate: Determine the Optical Density (OD value; absorbance value) at 450nm (Reference wavelength 630nm) with a microplate reader. Finish this step within 10min after stop the reaction.

**Interpretation of result**

◆ **Calculate the percentage of absorbance value**

$$\textbf{Percentage of absorbance value}(\%) = \frac{A}{A0} \times 100\%$$

A—the average OD value of the sample or the standard;

A0—the average OD value of the 0ppb standard.

It is used to calculate the percentage absorbance of a standard or sample.

◆ **Draw the standard curve and calculate**

- Take absorbance percentage (A/A0) of standards as Y-axis and the corresponding log of standards concentration (ppb) as X-axis.
- Draw the standard semi-log curves with X-axis and Y-axis.
- Take absorbance percentage of samples substitute into standard curve, then can get the corresponding concentration from standard curve. Last, **the resulting concentration**

**values multiplied by the corresponding dilution times is the actual concentration of ZEN of samples.**

If professional analysis software of the kit is used for calculation, it is more convenient for accurate and rapid analysis of a large number of samples.

## Attention

- Before test, the reagents and samples should be balanced to room temperature (25℃). If below 25℃, it will lead to all the standard OD value on the low side.
- In the washing process, dry wells may result in non-linear standard curves and undesirable reproducibility. Therefore, proceed to the next step immediately after washing.
- The reproducibility is largely determined by consistency of washing step. Please mix uniformly and wash thoroughly.
- During the incubation, cover microplates with adhesive membrane to avoid light.
- Do not use kits that are overdue. Do not mix reagents with those from other lots.
- Substrate Reagent A/B is colorless. If not, please discard.
- If absorbance value of 0ppb is below 0.5（A450nm< 0.5 ）, it means that the reagent may be metamorphic.
- Stop solution is corrosives. Please avoid contacting with skin.
- **As the OD values of the standard curve may vary according to the conditions of actual assay performance (e.g. operator, pipetting technique, washing technique or temperature effects), the operator should establish a standard curve for each test.**
- **For the 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.**

- The kit is used for rapid screening of actual samples. If the test result is positive, the instrument method such as HPLC, LC/MS can be used for quantitative confirmation.


GENETECH BIOTECH CO.,LTD

Add:
Xihu District, Hangzhou City, Zhejiang Province,310023,P.R.China
Email:sales@genetechbio.com
Tel:+ 86 15658815957