

(FOR RESEARCH USE ONLY. DO NOT USE IT IN CLINICAL DIAGNOSIS !)

**Catalog No: E-BC-K893-M**

**Specification: 96T(40 samples)**

**Measuring instrument: Microplate reader(440-480 nm)**

**Detection range: 2.44-200  $\mu\text{mol/L}$**

## **Elabscience<sup>®</sup> Histamine Colorimetric Assay Kit**

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

If you have any problem, please contact our Technical Service Center for help:

Toll-free: 1-888-852-8623

Tell: 1-832-243-6086

Fax: 1-832-243-6017

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

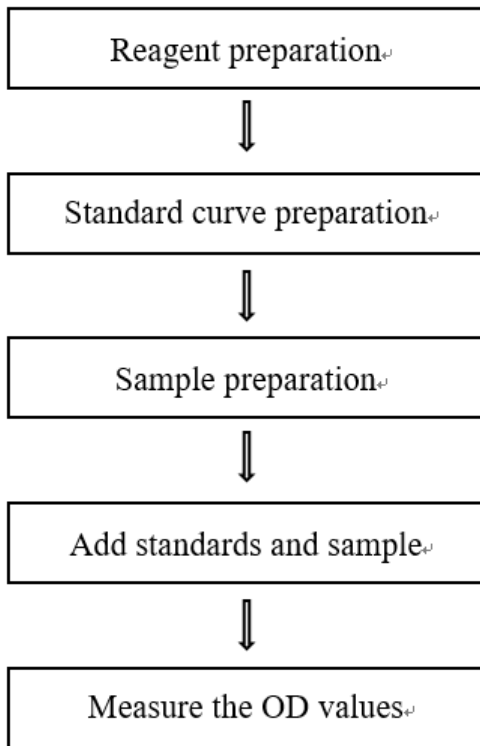
Website: [www.elabscience.com](http://www.elabscience.com)

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

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## Assay summary



## Intended use

This kit can be used to measure histamine content in serum (plasma) tissue and cell samples.

## Detection principle

Histamine is an endogenous active substance that exists widely in nature and is an important mediator involved in inflammatory response and immune damage. The histamine content increases with the degree of spoilage of the organism. Histamine can produce chromogenic substances with chromogenic agents under the action of enzymes, which has a maximum absorption peak at 460 nm. The histamine content of the sample can be calculated by measuring the OD value at 460 nm.

## Kit components & storage

Item	Component	Size (96 T)	Storage
Reagent 1	Extraction Solution	50 mL × 1 vial	-20°C, 12 months
Reagent 2	Substrate	Powder × 5 vials	-20°C, 12 months, shading light
Reagent 3	Buffer Solution	14 mL × 1 vial	-20°C, 12 months, shading light
Reagent 4	Chromogenic Solution	1.5 mL × 2 vials	-20°C, 12 months, shading light
Reagent 5	1 mmol/L Standard Solution	1.6 mL × 1 vial	-20°C, 12 months, shading light
	Microplate	96 wells	No requirement
	Plate Sealer	2 pieces	

Note: The reagents must be stored strictly according to the preservation conditions in the above table. The reagents in different kits cannot be mixed with each other. For a small volume of reagents, please centrifuge before use, so as not to obtain sufficient amount of reagents.

## Materials prepared by users

### Instruments:

Microplate reader (440-480 nm, optimum wavelength: 460 nm), 37 °C Incubator, Centrifuge, Water bath

### Reagents:

Double distilled water

### Consumptive material:

10 KD ultrafiltration tube

## Reagent preparation

① Equilibrate all reagents to room temperature before use.

② Preparation of working solution:

Dissolve one vial of substrate with 2.5 mL of buffer solution, mix well to dissolve. Store at 2-8 °C for 7 days protected from light.

③ Preparation of 200 µmol/L standard solution:

Dilute 200 µL of 1 mmol/L standard solution with 800 µL of double distilled water, mix well to dissolve. Store at 2-8 °C for 7 days protected from light.

④ The preparation of standard curve:

Always prepare a fresh set of standards. Discard working standard dilutions after use.

Dilute 200 µmol/L standard solution with double distilled water to a serial concentration. The recommended dilution gradient is as follows: 0, 40, 80, 100, 120, 140, 160, 200 µmol/L. Reference is as follows:

Item	①	②	③	④	⑤	⑥	⑦	⑧
<b>Concentration (µmol/L)</b>	<b>0</b>	<b>40</b>	<b>80</b>	<b>100</b>	<b>120</b>	<b>140</b>	<b>160</b>	<b>200</b>
<b>200 µmol/L standard (µL)</b>	0	40	80	100	120	140	160	200
<b>Double distilled water (µL)</b>	200	160	120	100	80	60	40	0

## Sample preparation

### ① Sample preparation

**Serum and plasma:** Filter the sample through a 10 KD ultrafiltration tube, centrifuge at 12000×g for 15 min at 4 °C and collect the filtrate for detection.

### **Tissue sample:**

- ① Harvest the amount of tissue needed for each assay (initial recommendation 20 mg).
- ② Wash tissue in cold PBS (0.01 M, pH 7.4).
- ③ Homogenize 20 mg tissue in 180 μL extraction solution with a dounce homogenizer at 4 °C.
- ④ Centrifuge at 10000×g for 10 min 4 °C to remove insoluble material. Collect supernatant, then incubate in boiling water bath for 20 min. Centrifuge at 10000×g for 10 min, then take the supernatant and preserve it on ice for detection.

### **Cell (adherent or suspension) samples:**

- ① Harvest the number of cells needed for each assay (initial recommendation =  $1 \times 10^6$  cells).
- ② Wash cells with PBS (0.01 M, pH 7.4).
- ③ Homogenize  $1 \times 10^6$  cells in 200 μL extraction solution with a ultrasonic cell disruptor at 4 °C.
- ④ Centrifuge at 10000×g for 10 min at 4 °C to remove insoluble material. Collect supernatant and keep it on ice for detection.

### ② Dilution of sample

The recommended dilution factor for different samples is as follows (for reference only):

Sample type	Dilution factor
10% Fresh salmon tissue homogenate	1
10% <i>Pelteobagrus fulvidraco</i> tissue homogenate	1

10% Spanish mackerel tissue homogenate	1
10% Spoiled Spanish mackerel tissue homogenate	1
10% Thunnini tissue homogenate	3-6
10% Spoiled Thunnini tissue homogenate	4-10
10% Pepper tissue homogenate	2-8
10% Grape flesh tissue homogenate	1
10% Garlic tissue homogenate	1
10% jujube tissue homogenate	2-8
Rat serum	1
Mouse serum	1
Fetal calf serum	1
$0.2 \times 10^6$ Jurkat cell	1
$0.2 \times 10^6$ 4T1 cell	1
$0.2 \times 10^6$ HL-60 cell	1
$0.2 \times 10^6$ 293T cell	1
$0.2 \times 10^6$ CHO cell	1

Note: The diluent is extraction solution. For the dilution of other sample types, please do pretest to confirm the dilution factor.

## Operating steps

- ① Standard well: add 20  $\mu$ L of standards with different concentrations into the standard wells.  
Sample well: add 20  $\mu$ L of sample into the sample wells.  
Control well: add 20  $\mu$ L of sample into the control wells.
- ② Add 20  $\mu$ L of chromogenic solution to the each well.
- ③ Add 100  $\mu$ L of working solution to standard and sample well. Add 100  $\mu$ L of buffer solution to control well.
- ④ Mix fully for 5 s with microplate reader and incubate at 37  $^{\circ}$ C for 40 min protected from light. Measure the OD values of each well at 460 nm with microplate reader.

## Calculation

### The standard curve:

1. Average the duplicate reading for each standard.
2. Subtract the mean OD value of the blank (Standard #①) from all standard readings. This is the absolved OD value.
3. Plot the standard curve by using absolved OD value of standard and correspondent concentration as y-axis and x-axis respectively. Create the standard curve ( $y = ax + b$ ) with graph software (or EXCEL).

### The sample:

#### 1. Serum (plasma) sample:

$$\text{Histamine content} \left( \frac{\mu\text{mol}}{\text{L}} \right) = \frac{\Delta A - b}{a} \times f$$

#### 2. Tissue sample:

$$\text{Histamine content} \left( \frac{\mu\text{mol}}{\text{kg wet weight}} \right) = \frac{\Delta A - b}{a} \div \frac{m}{V} \times f$$

#### 3. Cell sample:

$$\text{Histamine content} \left( \frac{\mu\text{mol}}{10^9} \right) = \frac{\Delta A - b}{a} \div \frac{n}{V} \times f$$

### [Note]

$\Delta A$ : Absolute OD ( $OD_{\text{Sample}} - OD_{\text{Control}}$ ).

m: the weight of tissue, g.

n: The number of cell sample/ $10^6$ .

V: The volume of extraction solution in the preparation step of sample, mL.

f: Dilution factor of sample before test.



## Appendix I Performance Characteristics

### 1. Parameter:

#### Intra-assay Precision

Three human serum samples were assayed in replicates of 20 to determine precision within an assay (CV = Coefficient of Variation).

Parameters	Sample 1	Sample 2	Sample 3
Mean ( $\mu\text{mol/L}$ )	25.00	50.00	80.00
%CV	0.5	0.8	1.6

#### Inter-assay Precision

Three human serum samples were assayed 20 times in duplicate by three operators to determine precision between assays.

Parameters	Sample 1	Sample 2	Sample 3
Mean ( $\mu\text{mol/L}$ )	25.00	50.00	80.00
%CV	1.5	2.3	4.2

#### Recovery

Take three samples of high concentration, middle concentration and low concentration to test the samples of each concentration for 6 times parallelly to get the average recovery rate of 102%.

	Standard 1	Standard 2	Standard 3
Expected Conc. ( $\mu\text{mol/L}$ )	25	50	80
Observed Conc. ( $\mu\text{mol/L}$ )	24.25	51	86.2
Recovery rate (%)	97	102	108

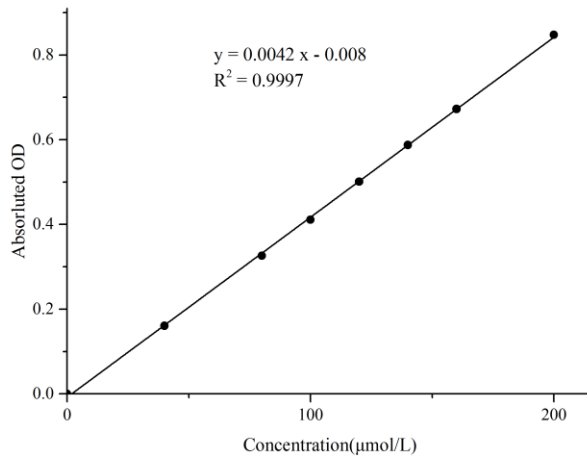
#### Sensitivity

The analytical sensitivity of the assay is  $2.44 \mu\text{mol/L}$ . This was determined by adding two standard deviations to the mean O.D. obtained when the zero standard was assayed 20 times, and calculating the corresponding concentration.

## 2. Standard curve:

As the OD value of the standard curve may vary according to the conditions of the actual assay performance (e.g. operator, pipetting technique or temperature effects), so the standard curve and data are provided as below for reference only:

Concentration ( $\mu\text{mol/L}$ )	0	40	80	100	120	140	160	200
OD value	0.068	0.227	0.395	0.478	0.565	0.651	0.742	0.915
	0.068	0.230	0.393	0.480	0.573	0.660	0.739	0.916
Average OD	0.068	0.229	0.394	0.479	0.569	0.656	0.741	0.916
Absoluted OD	0	0.161	0.326	0.411	0.501	0.588	0.673	0.848



## Appendix II Example Analysis

### Example analysis:

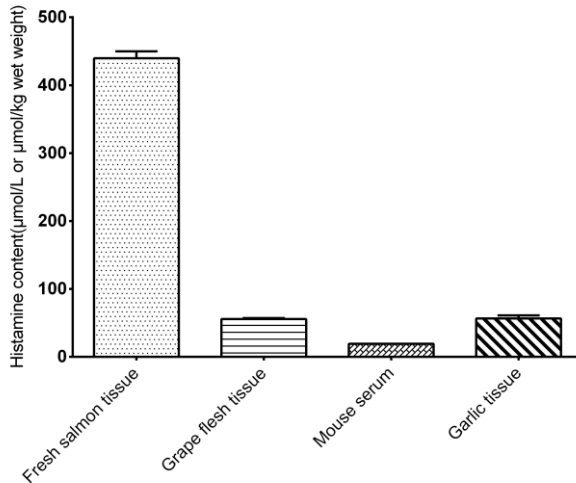
For 10% fresh salmon tissue homogenate, take 20  $\mu\text{L}$  of sample and carry the assay according to the operation table. The results are as follows:

Standard curve:  $y = 0.0042x - 0.008$ , the average OD value of the sample is 0.303, the average OD value of the control is 0.106, and the calculation result is:

Histamine content ( $\mu\text{mol}/\text{kg}$  wet weight)

$$= (0.303 - 0.106 + 0.008) \div 0.0042 \div (0.1 \div 0.9) = 439.64 \mu\text{mol}/\text{kg wet weight}$$

Detect 10% fresh salmon tissue homogenate, 10% grape flesh tissue homogenate, mouse serum and 10% garlic tissue homogenate, according to the protocol, the result is as follows:



## Statement

1. This assay kit is for Research Use Only. We will not response for any arising problems or legal responsibilities causing by using the kit for clinical diagnosis or other purpose.
2. Please read the instructions carefully and adjust the instruments before the experiments. Please follow the instructions strictly during the experiments.
3. Protection methods must be taken by wearing lab coat and latex gloves.
4. If the concentration of substance is not within the detection range exactly, an extra dilution or concentration should be taken for the sample.
5. It is recommended to take a pre-test if your sample is not listed in the instruction book.
6. The experimental results are closely related to the situation of reagents, operations, environment and so on. Elabscience will guarantee the quality of the kits only, and NOT be responsible for the sample consumption caused by using the assay kits. It is better to calculate the possible usage of sample and reserve sufficient samples before use.