

## Uric acid(UA)Assay Kit

**Note:** Take two or three different samples for prediction before test.

**Operation Equipment:** Spectrophotometer

**Catalog Number:** BC1360

**Size:** 50T/24S

### Components:

Extract: Liquid 50 mL ×1. Storage at 4°C.

Reagent I: Liquid 80 mL×1. Storage at 4°C.

Reagent II: Powder ×2 bottle. Store at 4°C and protect from light. Add 6 mL of Reagent I before use. Mix thoroughly. The rest of reagent store at 4°C. It can be stored for one week at 4°C.

Reagent III: Powder ×1 bottle. Store at 4°C and protect from light. Add 12 mL of Reagent I before use. Mix thoroughly. The rest of reagent store at 4°C. It can be stored for two week at 4°C.

Reagent IV: Powder ×1 bottle. Store at 4°C and protect from light. Add 12 mL of Reagent I before use. Mix thoroughly. The rest of reagent store at 4°C. It can be stored for two week at 4°C.

Reagent V: Powder ×1 bottle. Store at -20°C and protect from light. Add 12 mL of Reagent I before use. Mix thoroughly. Keep the unused reagents in separate packages at -20°C. Avoid repeated freezing and thawing. It can be stored for two week at -20°C.

Reagent VI: Powder ×1 bottle. Store at -20°C and protect from light. Add 12 mL of Reagent I before use. Mix thoroughly. Keep the unused reagents in separate packages at -20°C. Avoid repeated freezing and thawing. It can be stored for two week at -20°C.

Standard solution: Liquid ×1, 5 μmol/mL uric acid solution, store at 4°C and protect from light.

Working solution A: It is used for the detection of sample test tube, blank tube and standard tube. According to the ratio of Reagent II: Reagent III: Reagent IV: Reagent V: Reagent VI=1:1:1:1:2 to prepare when the solution will be used. It is recommended to use it within 2 hours after matching.

Working solution B: It is used for the detection of sample control tube. According to the ratio of Reagent II: Reagent III: Reagent IV: Reagent V: Reagent I=1:1:1:1:2 to prepare when the solution will be used. It is recommended to use it within 2 hours after matching.

### Product Description

Uric acid is the end product of purine metabolism. Disorders of purine metabolism, energy metabolism and renal excretion of uric acid can cause the increase or decrease of plasma uric acid level. And then lead to a variety of diseases such as ventilation, kidney disease, cardiovascular disease. Therefore, the determination of uric acid content has an important guiding significance in clinical diagnosis.

Uricase can catalyze the decomposition of uric acid into allantoin, CO<sub>2</sub> and H<sub>2</sub>O<sub>2</sub>. Then Fe<sup>2+</sup> in potassium ferrocyanide is oxidized by H<sub>2</sub>O<sub>2</sub> to form Fe<sup>3+</sup>. Fe<sup>3+</sup> can further react with 4-aminoantipyrine and phenol to form red Quinones, which has a characteristic absorption peak at 505 nm. The content of uric acid can be calculated by measuring the absorbance value at 505 nm.

### Reagents and Equipment Required but Not Provided.

Spectrophotometer, table centrifuge, water-bath, 1 mL glass cuvette, adjustable pipette, mortar/

homogenizer, EP tube, ice and distilled water.

## Procedure

### I. Extraction:

1. Tissue: according to the tissue weight (g): the volume of Extract (mL) is 1:5-10. (It is recommended that add 1 mL of Extract to 0.1 g tissue). Homogenate in ice bath, then centrifuge at 10000 rpm for 10 minutes at 4°C. Take the supernatant for test.
2. Serum (plasma) or urine: detect directly.

### II. Determination Procedure

1. Preheat the spectrophotometer for more than 30 minutes, adjust the wavelength to 505 nm and set the counter to zero with distilled water.
2. Dilute 5  $\mu\text{mol/mL}$  standard solution with distilled water to 0.25, 0.125, 0.0625, 0.03125, 0.015625  $\mu\text{mol/mL}$  for standby.
3. Operation table: (in 1.5 mL centrifuge tube)

Reagent Name ( $\mu\text{L}$ )	Control tube ( $A_C$ )	Test tube ( $A_T$ )	Standard tube ( $A_S$ )	Blank tube ( $A_B$ )
Sample	250	250	-	-
Standard	-	-	250	-
Distilled water	-	-	-	250
Working solution A	-	750	750	750
Working solution B	750	-	-	-

Mix thoroughly. React in 37°C water bath or constant temperature incubator for 30 min. Use 1mL glass cuvette to measure the absorption value A at 505 nm. Record as  $A_C$ ,  $A_T$ ,  $A_S$ ,  $A_B$ .  $\Delta A_T = A_T - A_C$ .  $\Delta A_B = A_T - A_B$ . Each test tube needs to set up a contrast tube and the standard curve only needs to test once or twice.

### III. Calculation of UA:

#### 1. Standard curve

Take the concentration of each standard solution as x-axis, and the corresponding  $\Delta A$  standard is y-axis. Then the linear regression equation  $y = kx + b$  is obtained. Bring  $\Delta A$  into the equation to get x ( $\mu\text{mol/mL}$ ).

#### 2. Calculate

##### (1) Calculate by sample weight

$$\text{UA content } (\mu\text{g/g fresh weight}) = x \times V_E \div W \times M = 168x \div W$$

##### (2) Calculate by volume

$$\text{UA content } (\mu\text{g/mL Serum (plasma) or urine}) = x \times V_S \div V_S \times M = 168x$$

$V_S$ : Sample volume, 0.25 mL;

$V_E$ : Extract solution volume, 1 mL;

W: Sample weight, g;

M: Molecular weight of uric acid, 168.

### Note:

1. When A is more than 1, diluted the sample with extract and then determined.
2. Working solution A and Working solution B should be prepared when the solution will be used. It is recommended to use it within 2 hours after matching. The working fluid is light yellow. If there is discoloration, it will be regarded as failure and need to be reconfigured.

**Examples:**

1. Add 0.1g rat kidney to 1mL extract solution and grind thoroughly, centrifuge and take supernatant, follow the determination procedure to operate, and calculate  $\Delta A = A(T) - A(B) = 1.91 - 0.698 = 0.493$ , standard curve:  $y = 3.5946x + 0.0045$ , calculate  $x = 0.1359$ , according with mass of sample to calculate: UA content ( $\mu\text{g/g mass}$ )  $= 168x \div W = 168 \times 0.1359 \div 0.1 = 228.3 \mu\text{g/g mass}$ .

2. Take goose serum, follow the determination procedure to operate, and calculate  $\Delta A = A(T) - A(B) = 0.339 -$

$0.128 = 0.211$ , standard curve:  $y = 3.5946x + 0.0045$ , calculate  $x = 0.0574$ , according with volume of sample to calculate: UA content ( $\mu\text{g/ml serum}$ )  $= 168x = 168 \times 0.0574 = 9.6 \mu\text{g/ml serum}$ .

**Related Products:**

BC1300/BC1305	Ceruloplasmin (CP) Assay Kit
BC1310/BC1315	Total antioxidant capacity (T-AOC) Assay Kit
BC1370/BC1375	Total Sulfhydryl Assay Kit