TECHNICAL MANUAL

Uric Acid (UA) Colorimetric Assay Kit (Enzyme)

- **SKU CODE:** MAES0487
- **SIZE:** 48 Tests
- **DETECTION PRINCIPLE:** Assay Kit
- **RUO:** Research-Use-Only

Revised: 01/2026

1. Assay summary

- Reagent preparation
- Standard curve preparation
- Sample preparation
- Add standards and samples
- Incubate and measure OD value

2. Intended use

This kit can be used to detect the uric acid (UA) content in serum and plasma samples.

3. Detection principle

Uric acid produces allantoin, CO2 and H2O2 under the action of uricase, and H2O2 can produce red quinone imide compounds under the action of color developer. The color depth is proportional to the H2O2 content and has maximum absorption at 510 nm wavelength, allowing for calculation of the uric acid content.

4. Kit components & storage

Item	Component	Size 1(48 T)	Size 2(96 T)	Storage
Reagent 1	Chromogenic Agent A	12 mL × 1 vial	24 mL × 1 vial	2-8°C, 12 months, shading light
Reagent 2	Chromogenic Agent B	3 mL × 1 vial	6 mL × 1 vial	2-8°C, 12 months, shading light
Reagent 3	1 g/L Uric Acid Standard Solution	1 mL × 1 vial	1 mL × 1 vial	2-8°C, 12 months
	Microplate	48 wells	96 wells	No requirement
	Plate Sealer	2 pieces	2 pieces	

5. Materials prepared by users

Instruments:

Microplate reader (500-520 nm, optimum wavelength: 510 nm), Incubator (37°C)

6. Reagent preparation

1. Equilibrate all reagents to 25°C before use.
2. **Preparation of reaction working solution::** For each well, prepare 250 µL of reaction working solution by mixing 200 µL of chromogenic agent A and 50 µL of chromogenic agent B. The reaction working solution should be prepared fresh and used within the same day.
3. **Preparation of 100 mg/L standard solution::** Before testing, prepare sufficient 100 mg/L standard solution. For example, to prepare 1000 µL of 100 mg/L standard solution, mix 100 µL of 1 g/L uric acid standard solution with 900 µL of double distilled water. Store at 2-8°C for up to 7 days.
4. **Preparation of standard curve::** Always prepare a fresh set of standards. Discard working standard dilutions after use. Dilute 100 mg/L standard solution with double distilled water to serial concentrations. The recommended dilution gradient is: 0, 10, 20, 30, 40, 50, 60, 80, 100 mg/L.

7. Standard curve dilution table

Item	1	2	3	4	5	6	7	8
Concentration (mg/L)	0	10	20	30	40	60	80	100
100 mg/L standard (µL)	0	20	40	60	80	120	160	200
Double distilled water (µL)	200	180	160	140	120	80	40	0

8. Sample preparation

1. **Sample preparation::** Serum (plasma) samples: detect directly.

2. **Dilution of samples::** The recommended dilution factor for different samples is as follows (for reference only): Human serum: 1, Human plasma: 1, Rabbit serum: 1, Rat plasma: 1, Bovine serum: 1, Mouse plasma: 1. The diluent is double distilled water. For dilution of other sample types, please perform a pretest to confirm the dilution factor.

9. Operating steps

1. Standard wells: Add 5 µL of standard solution with different concentrations to the corresponding wells. Sample wells: Add 5 µL of sample to the corresponding wells.
2. Add 250 µL of reaction working solution to each well.
3. Mix thoroughly with microplate reader for 5 s, incubate at 37°C for 10 min. Measure the OD value of each well at 510 nm.

10. Calculation

The standard curve:

1. Average the duplicate readings for each standard.

2. Subtract the mean OD value of the blank (Standard #①) from all standard readings. This is the absolute OD value.

3. Plot the standard curve using the OD value of standards and corresponding concentrations as y-axis and x-axis respectively. Create the standard curve (y = ax + b) with graph software (or Excel).

The sample:

Serum (plasma) samples:

UA content (mg/L) = (ΔA - b) / a × f

[Note]

ΔA: $\Delta A = A_{sample} - A_{blank}$

f: Dilution factor of sample before test

11. Appendix I Performance Characteristics

Parameter:

Intra-assay Precision

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

Intra-assay Precision Results

Parameters	Sample 1	Sample 2	Sample 3
Mean (mg/L)	25.0	50.0	75.0
%CV	1.6	1.3	1.8

Inter-assay Precision

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

Inter-assay Precision Results

Parameters	Sample 1	Sample 2	Sample 3
Mean (mg/L)	25.0	50.0	75.0
%CV	4.2	5.1	2.7

Recovery

Three samples of high, middle, and low concentrations were tested 6 times in parallel for each concentration to obtain an average recovery rate of 94.1%.

Recovery Results

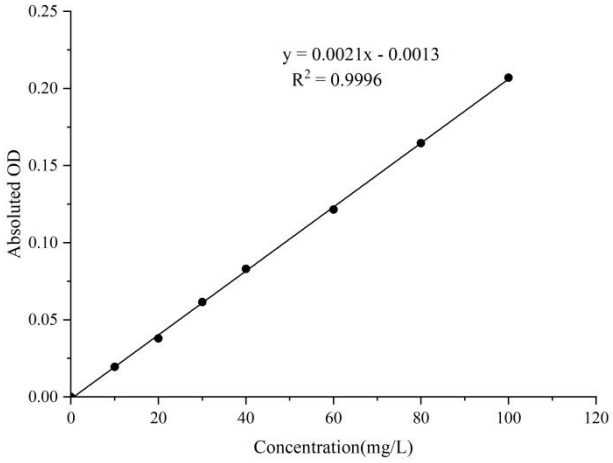
Parameters	Sample 1	Sample 2	Sample 3
Expected Conc. (mg/L)	25.0	50.0	75.0
Observed Conc. (mg/L)	23.3	47.5	70.7
Recovery rate (%)	93.0	95.0	94.3

Sensitivity

The analytical sensitivity of the assay is 2.95 mg/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.

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), the standard curve and data provided below are for reference only.



Standard curve data

Concentration (mg/L)	0	10	20	30	40	60	80	100
OD value	0.054	0.073	0.091	0.114	0.137	0.176	0.219	0.263
	0.053	0.073	0.092	0.116	0.136	0.174	0.217	0.258
Average OD value	0.054	0.073	0.092	0.115	0.137	0.175	0.218	0.261
Absolute OD value	0.000	0.020	0.038	0.062	0.083	0.122	0.165	0.207

12. Appendix II Example Analysis

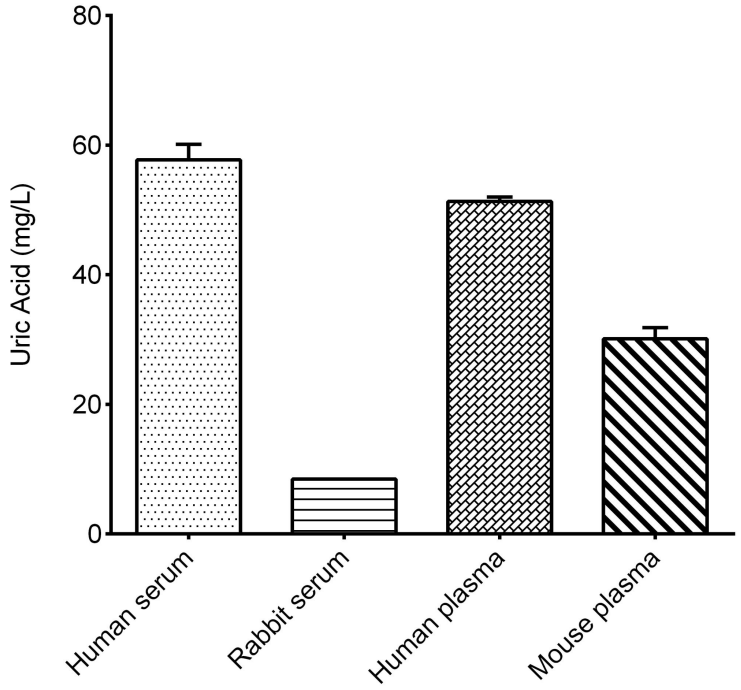
Example analysis:

Take 5 μL of human serum and perform the assay according to the operating steps. The results are as follows:

Standard curve: y = 0.0021x - 0.0013, the OD value of the sample well is 0.174, the OD value of the blank well is 0.054, and the calculation result is:

UA content (mg/L) = (0.174 - 0.054 + 0.0013) ÷ 0.0021 × 1 = 57.76 mg/L

Human serum, rabbit serum, human plasma, and mouse plasma were detected according to the protocol, and the results are as follows:



13. Statement

1. This assay kit is for Research Use Only. Assay Genie assumes no responsibility for any problems or legal liabilities arising from the use of this kit for clinical diagnosis or any other purpose.
2. Please read the instructions carefully and calibrate the instruments before performing the experiments. Follow the instructions strictly throughout the procedure.
3. Appropriate protective measures must be taken, including wearing a lab coat and latex gloves.
4. If the concentration of the substance falls outside the detection range, perform an additional dilution or concentration step on the sample.

5. It is recommended to perform a pretest if your sample type is not listed in the instruction manual.
6. Experimental results are closely related to reagent quality, operator technique, environmental conditions, and other factors. Assay Genie guarantees the quality of the kits only and is NOT responsible for sample consumption resulting from use of the assay kits. It is advisable to estimate the expected sample usage and reserve sufficient samples before starting the experiment.

Assay Genie 100% money-back guarantee!

If you are not satisfied with the quality of our products and our technical team cannot resolve your problem, we will give you 100% of your money back.

Manufacturers Statement: This final kit system is assembled and quality-released by Assay Genie Limited.