Uric Acid (Uricase-POD Enzymatic colorimetric method)

Order Information

Cat.No.	KitConfiguration
OMR1157	Reagent 1: 2X40 mL Reagent 2: 2X10mL

Summary

Uric Acid is waste product excreted by kidneys. The increased concentration of Uric Acid is found in Gout disease, arthritis or impaired renal functions.

Method

Uricase–POD based Enzymatic colorimetric.

Principle

Uric acid is oxidized by uricase to allantoine and hydrogen peroxide ($2H_2O_2$), which under the influence of POD, 4–aminophenazone (4- AP) and 2-4 Dichlorophenol sulfonate (DCPS) forms a red quinoneimine compound:

$$\text{Uric acid} + 2H_2O + O_2 \longrightarrow \text{Allantoine} + CO + 2H_2O_2$$

$$2H_2O_2 + \text{4-AP} + \text{DCPS} \longrightarrow \text{Quinoneimine} + 4H_2O$$

The intensity of the red color formed is proportional to the uric acid concentration in the sample.

Reagent Preparation

Mix, 4 parts of reagent 1 with 1 part of reagent 2 = Working reagent.
Leave the working reagent for at least 30 min. at 15° - 25°C before use. Working Reagent Stability: 4 weeks at 2°- 8°C. Protect working reagent from light.

Reagents Storage Instructions and Stability

Reagent and standard are stable up to the end of the indicated month of expiry, if stored at 2° – 8°C, protected from light and contamination is avoided. Do not freeze the reagents!
Reagent 1: Enzyme Solution
Reagent 2: Substrate Solution
Standard: Uric Acid (Conc. 6 mg/dL)

Warnings andPrecautions

1. In case of contact with eyes, rinse immediately with plenty of water and seek medicaladvice.
2. Always use safety pipettes to pull the reagents into a pipette.
3. Reagents may contain some non-reactive and preservative components. It is suggested to handle carefully, avoid direct contact with skin and do notswallow.
4. The reagents contain sodium azide (0.95 g/L) as preservative. Do not swallow. Avoid contact with skin and mucous membranes.
5. For professional useonly.

Waste Management

Please refer to local regulatory requirements.

Materials required but not provided

NaCl solution 9 g/L
General laboratory equipment

Assay Procedure

Application sheets for automated systems are available on request

Wavelength	546nm
Lightpath	10mm
Temperature	37°C
Measurement	Against reagentBlank

	Blank	Sample/Standard
Sample/Standard	-	10 µL
Distilled water	10 µL	-
Reagent	1000 µL	1000 µL
Mix, incubate for 5 min. at 37°C. Read absorbance against the reagent blank		

Calculation:

With Standard or Calibrator

$$\text{Uric Acid(mg/dL)} = \frac{\Delta A \text{ Sample}}{\Delta A \text{ Std. /Cal}} \times \text{Conc. of Std. /Cal(mg/dL)}$$

Conversion Factor

Uric Acid (mg/dL) X 59.48 = Uric Acid (µmol/L)

Quality Control
For internal quality normal and abnormal controls should be assayed with each batch ofsamples.
Each laboratory should establish corrective action in case of deviations in control recovery.

Performance Characteristics
Measuring range
The test has been developed to determine uric acid within a measuring range from 0.5 – 20 mg/dL. When values exceed this range samples should be diluted 1 + 4 with NaCl solution (9 g/L) and the result to be multiplied by 5.

Specificity/Interferences
No interference was observed by, Bilirubin up to 40 mg/dL, and triglycerides up to 2000 mg/dL.

Sensitivity/Limit of Detection
The lower limit of detection is 0.5 mg/dL.

Linearity
The maximum limit of detection is 20 mg/dL.

Precision

Intra-assay n = 20	Mean [mg/dL]	SD [mg/dL]	CV [%]
Sample 1	5.61	0.01	0.18
Sample 2	9.47	0.04	0.38

Inter-assay n = 20	Mean [mg/dL]	SD [mg/dL]	CV [%]
Sample 1	4.28	0.02	0.41
Sample 2	8.92	0.06	0.64

Method Comparison
A comparison of Nucleus Diagnosys Uric Acid (y) with a commercially available test (x) using 15 samples gave following results:
$y = 0.935x + 0.334$; $r^2 = 0.981$

Reference Range

Gender	Female	Male
Unit	mg/dL (µmol/L)	mg/dL (µmol/L)
Adults	2.6 – 6.0 (155 – 357)	3.5 – 7.2 (208 – 428)
Children		
0 - 5 days	1.9 – 7.9 (113 – 470)	1.9 – 7.9 (113 – 470)
1 - 4 yr.	1.7 – 5.1 (101 – 303)	2.2 – 5.7 (131 – 340)
5 - 11 yr.	3.0 – 6.4 (178 – 381)	3.0 – 6.4 (178 -381)
12 - 14 yr.	3.2 – 6.1 (190 -363)	3.2 – 7.4 (190 – 440)
15 - 17 yr.	3.2 – 6.4 (190 – 381)	4.5 – 8.1 (268 – 482)
Urine		
≤ 800 mg/24h (4.76 mmol/24h) assuming normal diet.		
≤600mg/24h(3.57mmol/24h)assuminglowpurinediet.		

Each laboratory should check if the references range are transferable to its own patient population and determine own reference ranges if necessary.

Literature

1. **Thomas L. Clinical laboratory diagnostics. 1st ed. Frankfurt: TH- Books Verlagsgesellschaft;1998.p.208-14.**
2. **Tietz Textbook of Clinical Chemistry. 3rd ed, Phihadelphia: WB Saunders Company;1999.p.1204-70.**
3. **Disch Med Wschr 1973; 98: 380-384.**

MANUFACTURED BY: NUCLEUS DIAGNOSYS LLP, INDIA

Marketed By: ORCHARD MEDICAL,

DIAMOND ARCADE, 68 JESSORE ROAD,

1st FLOOR, UNIT No. 110 & 112, KOLKATA – 700 055

CUSTOMER CARE No: 84200 69980

CUSTOMER CARE E-MAIL: sales.orchardmedical@gmail.com