URIC ACID

Uric Acid. Uricase-POD. Liquid

Product information

24URIC01-UN	**Meditest Uric Acid**	**4 x 40 mL 2x20 mL**
24URIC01-AU	**Meditest Uric Acid**	**4 x 40 mL 2x20 mL**
24URIC01-AB	**Meditest Uric Acid**	**4 x 40 mL 2x20 mL**
24URIC01-ER	**Meditest Uric Acid**	**4 x 40 mL 2x20 mL**
24URIC01-AR	**Meditest Uric Acid**	**4 x 40 mL 2x20 mL**

Purpose

In vitro assay for the quantitative determination of uric acid in human serum, plasma and urine.

Summary

Uric acid and its salts are the end products of purine metabolism. In progressive renal failure, urea, creatinine and uric acid are retained in the blood. A high uric acid level can be indicative of kidney failure and is often associated with gout[1,5,6]. Clinical diagnosis should not be based on a single test result, but clinical and other laboratory data should be integrated

Test principle

Uric acid is oxidized by uricase to allantoin and hydrogen peroxide ($2H_{2O2}$), which forms a red kinoneine compound under the influence of POD, 4-aminophenazone (4-AP) and 2-4 Dichlorophenol sulfonate (DCPS):

Uric acid + $2H_2O + O_2$ $\xrightarrow{\text{Uricase}}$ Allantoine + CO_2 + 2H2O2

$2H_2O_2$+4-AP+DCPS $\xrightarrow{\text{POD}}$ Quinoneimine+ $4H_{2O}$

The intensity of the resulting red color is proportional to the concentration of uric acid in the sample[1,2].

Reagents - working solutions

R 1 Buffer	Phosphate pH 7.4 2-4 Dichlorophenol sulfonate (DCPS)	50 mmol/L 4 mmol/L
R 2 Enzymes	Uricase Peroxidase (POD) Ascorbate oxidase 4 – Aminophenazone (4-AP)	60 U/L 660 U/L 200 U/L 1 mmol/L

Precautions warnings

It is intended for in vitro diagnostic use by healthcare professionals. Follow the normal precautions necessary in handling all laboratory reagents.
Infectious or microbial waste:
Warning: handle waste as potentially biohazardous. Dispose of waste according to accepted laboratory instructions and procedures.
Environmental hazards: Follow all relevant local disposal regulations to determine that it has been disposed of safely. If requested, a safety data sheet can be provided to professional users.
Inhibit foam formation in all reagents and sample types (sample, calibrator and control).
If there is any damage on the package, do not use it Read the user manual carefully before use, do not use the expired assay kit Do not mix different lot reagents.
All samples should be considered epidemic material, please dispose of them in accordance with the laboratory working standard of infectious diseases.
Take the necessary protective measures to prevent users from becoming infected during operation.
This kit contains components classified according to Regulation (EC) No 1272/2008 as follows

Warning:
H319 It causes severe irritation to the eye.
Prevention:
P264 After handling, wash the skin thoroughly.
P280 Wear eye protection/face protection.
Answer:
P305 + P351+ P338
IF IN THE EYES: Rinse carefully with water for a few minutes. Remove the lenses if they are present and easy to remove. Continue washing.
P337 + P313 If eye irritation persists: Seek medical advice/help.

Use of reagents

Ready to use.
Failure to pipet the reagent correctly, potentially leading to erroneous results, can be caused by excessive foaming of the reagent Ensure that foams are removed from the surface of the reagent before placing it in the analyzer.

Storage and stability

All components of the kit are stable until the expiration date on the label when stored tightly closed at 2-8ºC, protected from light and contamination is avoided during their use.
Do not use reagents after the expiration date. Signs of reactive deterioration: Presence of particles and turbidity.

Sample collection and preparation

- Serum or plasma[1]: stability for 3-5 days at 2-8ºC or 6 months at -20ºC
Urine (24 h)[1]: Stability for 4 days at 15-25ºC, pH >8.
Dilute the sample with distilled water in a ratio of 1/50. Mix. Multiply the results by 50 (dilution factor);

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If the urine is cloudy; Heat the sample to 60ºC for 10 minutes to dissolve precipitated urates and uric acid. Do not put it in the refrigerator.

Required Materials (not included in the kit)

1. Cat# 24BIO01-DC Meditest Diachem Calibrator
2. Cat# 24BIO01-DQ Meditest Diacheck Control L1
3. Cat# 24BIO02-DQ Meditest Diacheck Control L2
4. General laboratory equipment
5. Distilled or deionized water

Working Procedure

If you are using a spectrophotometer to perform this test, work with the following procedure. Ask your representative for the application data for fully automatic devices.

1.Test Conditions:
Wavelength: . 520 nm
Cuvette: . . . . . 1 cm light path
Temperature: . 37ºC / 15 25ºC 2.Set the appliance to zero with distilled water.
3.Place the pipettes in a cuvette.

	Blank	Standard	Sample
WR (mL)	1,0	1,0	1,0
Standard(Note 2,3) (µL)	--	10	--
Sample (µL)	--	--	10

4. Stir and incubate at 37ºC for 5 minutes or at 15-25ºC for 10 minutes
5. Read the absorbance of samples and Standard (A) against the Gap. The color is stable for at least 30 minutes.

Serum/plasma

$$\frac{\text{(A) Sample}}{\text{(A) Standard}} \text{ X 6 (Standar conc)=mg/dL uric acid}$$

Urine 24 h

$$\frac{\text{(A) Sample}}{\text{(A) Standard}} \text{ X 6 X Vol. (dL) urine 24h =mg/24h uric acid}$$

Flip factor:
mg/dL x 59.5 = µmol/L
mg/dL × 0.059 = mmol/L

Expected values
Serum, plasma

Men	202.3-416.5 µmol/L	(3.4-7.0 mg/dL)
Women	142.8-339.2 µmol/L	(2.4-5.7 mg/dL)

Urine (reference range according to Krieg and Colombo):
1. Morning Urine 2200-5475 µmol/L (37-92 mg/dL)
24-hour urine 1200-5900 µmol/day(200-1000 mg/day)
Corresponding value 773-3986 µmol/lb) (13-67 mg/dL)

b) Calculated from 1.5 L/24 hour urine volume.

Urine (reference range according to Tietz)

Average nutrition	250-750 mg/24 hours
Low-purine diet	
Men	< 480 mg/24 hours
Women	<400 mg/24 hours
High-purine diet	<1000 mg/24 hours

These values are for orientation purposes; Each laboratory should establish its own reference range

Limitations

No interference was observed with bilirubin up to 170 µmol/L, haemoglobin up to 130 mg/dL, and ascorbic acid up to 570 µmol/L^2.
A list of drugs and other substances that interact with the determination of uric acid is reported by Young et al.3,4.

Performance characteristics

Measuring range: 0.01647- 40 mg/dL. If the concentration is greater than the linearity limit, dilute the sample with NaCL 9 g/L in a ratio of 1:2 and multiply the result by 2.

Precision

	Intra-assay (n=20)		Inter-assay (n=20)	
Mean (mg/L)	4,46	10,37	4,71	11,02
SD	0,02	0,05	0,06	0,15
CV (%)	0,46	0,44	1,20	1,37

Sensitivity: 1 mg/dL = 0.0323 A.
Accuracy: Results obtained using Meditest reagents (y) showed no systematic differences when compared to other commercial reagents (x). The results obtained using 50 samples are as follows:
Correlation coefficient (r)^2: 0.99734.
Regression equation y= 0.816x – 0.319

The results of the performance characteristics depend on the analyzer used.

References

1. Schultz A. Uric acid. Kaplan A et al. Clin Chem The C.V. Mosby Co. St Louis. Toronto. Princeton 1984; 1261-1266 and 418.
2. Fossati P et al. Clin Chem 1980;26:227-231.
3. Young DS. Effects of drugs on Clinical Lab. Tests, 4th ed AACC Press, 1995.
4. Young DS. Effects of disease on Clinical Lab. Tests, 4th ed AACC 2001.
5. Burtis A et al. Tietz Textbook of Clinical Chemistry, 3rd ed AACC 1999.
6. Tietz N W et al. Clinical Guide to Laboratory Tests, 3rd ed AACC 1995

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