

Order No. HSR 342
Content: 40 tests

Method ^{1,2)}
Enzymatic colorimetric test, Uricase-PAP method

Sample material
Serum, heparinised or EDTA plasma
Stability of uric acid in serum/plasma
at +2°C to +8°C: 5 days
at +15°C to +25°C: 3 days

Reagent
Contents / concentrations:
1. Starter reagent (caps in PE-bottle)
Uricase > 500 U/L, Peroxidase (POD) > 750 U/L,
4-Aminophenazone 0.23 mmol/L
2. Buffer solution (pre-portioned in round cuvettes)
4-Chlorophenol 1.8 mmol/L, Sodium azide < 0.1 %;
Triton X-100 < 1%, PIPES-buffer pH 7.8, 20 mmol/L,
nonionic detergent 7g/L, Natriumcholate 2.5 g/L

Safety information
The buffer solution (round cuvette) contains Sodium azide (<0.1 %) and Triton X-100. Do not swallow and avoid contact with skin and mucous membranes. If desired a safety data sheet will be provided.³⁾

Storage and shelf life
Reagents can be kept at a temperature between +2°C and +8°C until the expiry date indicated on the packaging. Protect from direct sunlight and strong light.

Measurement conditions
Measurement devices: Vario Photometer
Dr. Lange Photometer
Meas. wavelength: 546nm
Temperature: Room temperature

Measurement range
0.4 - 20 mg/dL (24 - 1190 µmol/L)
In case of exceeding these values, dilute the sample 1+1 with physiological saline solution. Multiply the result by 2.

Working instructions

Pipette into round cuvette:	
	Analysis
Serum / plasma	100 µL
Mix thoroughly. Leave it at room temperature for 10 minutes. Measure within 10 minutes.	

- Select the <UA 342> test.
- Set the photometer's zero point using a non-processed round cuvette (blank value).
- Remove cuvette after signal tone.
- Screw the cap from PE-bottle onto the cuvette with sample (analysis cuvette), dissolve the starter reagent by inverting several times.
- Leave it at room temperature for 10 minutes.
- Insert analysis cuvette, read the result.

Quality assurance

For quality assurance we recommend universal control sera from company Roche, www.roche.de:
PreciControl ClinChem Multi 1 / Multi 2 (4 x 5 mL)
Order-No.: 05 947 626 190 / 05 947 774 190
Ref.: Roche / Hitachi analyzers,
Method: plus (Uricase - PAP)

Reference values

	mg/dL	µmol/L
Women	2.4 - 5.7	143 - 339
Men	3.4 - 7.0	202 - 416
24-h urine ⁷⁾ : 0.25 - 0.75 g resp. 1.49 - 4.46 mmol		

Tips

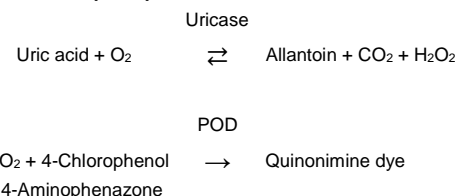
- The reagent solution, which needs to be shelved in the refrigerator, has to be warmed up to room temperature, before measurement.
- In case of haemolytic or lipaemic sera it is recommendable to use a sample blank: For zero adjustment use the cuvette with sample material instead of the blank value cuvette. Afterwards start reaction with cap.

Summary

Uric acid is the final product of the purine metabolism. It arises due to the decomposition of endogenous and exogenous (with food ingested) purines in the organism. The excretion takes place at approx. 80 % via the kidney. If the serum-uric acid levels are too high, the released uric acid crystallises out and deposits in the tissue.^{4,5)}

Nowadays only enzymatic methods, which are based on the oxidation of uric acid via uricase, are used for the determination. The withdrawal of the uric acid concentration can be measured spectral-photometrically (UV test). As a matter of routine the PAP methods, which contain the Trinder reaction (H₂O₂, which was generated during the uricase reaction, converts into a dye), have proved of value. This measurement principle forms also the basis of the Diaglobal colorimetric test.

Measurement principle⁴⁾



The concentration of the quinonimine dye is proportional to the concentration of uric acid in serum / plasma and is measured photometrically at 546 nm.

Performance parameters Specificity / interferences ⁶⁾

No interference due to bilirubin (< 20 mg/dL), lipaemia (triglycerides < 1000 mg/dL), and ascorbic acid in physiological concentrations (< 20 mg/l).
Haemoglobin falsifies too high values, in case of not considering the sample blank value.
Interferences due to pharmaceuticals: lowered values due to methyl dopa (> 3 mg/l) and gentisine acid (> 15 mg/l) in concentrations above the therapeutic field.

Inaccuracy

The reproducibility was checked using human and control samples.

In series [n = 20]	Average [mg/dL]	Standard deviation [mg/dL]	VK [%]
Sample 1 Sample 2	4.29 9.77	0.10 0.16	2.3 1.6
From day to day [n = 20]	Average [mg/dL]	Standard deviation [mg/dL]	VK [%]
Sample 1 Sample 2	4.31 9.71	0.12 0.19	2.7 1.9

Analytic sensitiveness

Lower detection limit: 0.4 mg/dL (24 µmol/L)

Comparison of methods

A comparison of the Diaglobal test HSR 342 (y) and a commercially available test (x) based on the Uricase-PAP method resulted in the following correlation according to the Passing/Bablok⁷⁾ process:

$$y = 1.036x - 0.09$$

$$r = 0.992$$

n = 40

Concentration range: 1.6 - 18 mg/dL

Information on disposal

Waste code number 180106:
Vials with reagent are considered hazardous waste. Do not allow reagent to reach surface water or sewage system. Dispose of in accordance with official regulations. Non-contaminated and completely empty packaging can be recycled.
Non-contaminated and completely empty packaging can be recycled.

Bibliography

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