# Uric Acid
## Enzymatic Colorimetric Method

**Quantitative determination of Uric Acid in serum / Plasma / Urine**
**Only for *In Vitro* Diagnostic use**

**ORDER INFORMATION**

| REF | Cont. |
|---|---|
| UAC 25 | 1 X 25 mL |
| UAC 100 | 2 X 50 mL |
| UAC 200 | 4 X 50 mL |
| UACMONO 25 | 25 X 1 mL |
| UACMONO 50 | 50 X 1 mL |

**CLINICAL SIGNIFICANCE**
Uric acid and its salts are end products of the purine metabolism. With progressive renal insufficiency, there is retention in blood of urea, creatinine and uric acid. Elevate uric acid level may be indicative of renal insufficiency and is commonly associated with gout. Clinical diagnosis should not be made on a single test result; it should integrate clinical and other laboratory data.

**Method**
Colorimetric enzymatic test using Uricase

**PRINCIPLE**
Uric acid is converted by uricase to allantoin and hydrogen peroxide, which under the catalytic influence of peroxidase, oxidises 3, 5 - dichloro - 2 - hydroxybenzenesulfonic acid and 4- aminophenazone to form a red-violet quinoneimine compound.

**REAGENT**
Reagent1 : Uric Acid Reagent
Uric acid Standard : 5 mg/dL

**REAGENT PREPARATION**
The Reagent is ready to use.

**REAGENT STORAGE AND STABILITY**
The Reagent is stable till expiry when stored at 2 - 8°C.
Store protected from light.

**WARNING AND PRECAUTIONS**
- For in vitro diagnostic use.
- Do not use components beyond the expiration date.
- Do not mix materials from different kit lot numbers.
- Exercise the normal precautions required for handling all laboratory reagents.
- The reagent contains preservative. Do not swallow. Avoid contact with skin and mucous membranes.
- For detailed information refer Material Safety Data Sheet.

**WASTE MANAGEMENT**
Please refer to local legal requirements.

**MATERIALS REQUIRED BUT NOT PROVIDED**
- NaCl solution 9 g/L
- General laboratory equipment

**SAMPLE COLLECTION AND PRESERVATION**
**Serum, heparin plasma or EDTA plasma**
Stability: 7 days at 4 – 8°C
6 Months at –20°C
Discard contaminated specimens! Freeze only once!

**ASSAY PROCEDURE**
**Operating Instructions**
- Check reagent inventories at least daily to ensure that quantities are sufficient for the planned work load.
- Bring all reagents, standard and samples to room temperature 18 - 28ºC, prior to analysis.

| AUTOMATED PARAMETERS | |
|---|---|
| Wavelength | 505 nm (490-550 nm) |
| Reaction Type | End Point |
| Cuvette | 1 cm light path |
| Reaction Temperature | 37°C |
| Reaction Type | Increasing |
| Measurement | Against Reagent Blank |
| Sample Volume | 25µl |
| Reagent Volume | 1000 µl |
| Incubation | 10 minutes |
| Blank Absorbance Limit | < 0.200 |
| Low Normal | 2.4 mg/dL ( 0.14 mmol/L) |
| High Normal | 7.2 mg/dl (0.43 mmol/L) |
| Linearity | 25.0 mg/dL (1.50 mmol/L) |

**MANUAL ASSAY PROCEDURE**
**Pipette into Test Tubes**

| | Blank | Standard | Test |
|---|---|---|---|
| **Reagent 1** | 1000µL | 1000µL | 1000µL |
| **Standard** | -- | 25µL | -- |
| **Sample** | -- | -- | 25µL |

- Mix & Incubate for 10 min. at 37 $^0$C. Measure absorbance of Sample (AT) and Standard (AS) against Reagent Blank at 505 nm. The colour is stable for 30 min. at R.T.

**SAMPLE DILUTIONS**
- This method is linear upto a concentration of 25 mg/dL.
- Dilute samples above this concentration 1:1 with 0.9% saline
- Repeat assay. Multiply the result by 2.

**CALCULATION**

$$\text{Uric Acid mg/dL} = \frac{\text{Abs.of Sample (AT)}}{\text{Abs.of Standard (AS)}} \times \text{Standard Value (5mg/dL)}$$

**CLIBRATORS AND CONTROLS**
For the calibration of automated photometric systems the commercially available suitable multi-calibrator is recommended.
The assigned values of **Uric Acid standard** have been made traceable to the reference method gas chromatography-isotope dilution mass spectrometry (GC-IDMS).
It is recommended to run a normal and a pathological control serum which is commercially available to verify the performance of the measured procedure. The value of controls should fall within the established limit.
Each laboratory should establish corrective action in case of deviations in control recovery.

**PERFORMANCE CHARACTERISTICS**
**WITHIN RUN**

| Sample | Mean Concentration | SD | CV % |
|---|---|---|---|
| BIORAD 1 | 4.66 | 0.02 | 0.51% |
| BIORAD 2 | 9.54 | 0.03 | 0.28% |

**RUN TO RUN**

| Sample | Mean Concentration | SD | CV % |
|---|---|---|---|
| BIORAD 1 | 4.65 | 0.02 | 0.46% |
| BIORAD 2 | 9.54 | 0.02 | 0.23% |

**LINEARITY**
The method is linear upto a concentration of 25 mg/dL. Dilute samples above this concentration 1:1 with 0.9% saline solution and repeat assay. Multiply the result by 2.

**Limit of detection**: The limit of detection for Uric Acid is 0.5 mg/dL.

### METHOD COMPARISON

A comparison of Paramcare Uric Acid with a commercially available assay (x) using 59 samples gave following results: $R^2 = 0.9750$

### REFERENCE VALUES

| | | |
|---|---|---|
| Child | 0.12 - 0.33 mmol/L | 2.0 - 5.5 mg/dL |
| Adult Male | 0.21 - 0.43 mmol/L | 3.5 - 7.2 mg/dL |
| Adult Female | 0.15 - 0.36 mmol/L | 2.6 - 6.0 mg/dL |
| Urine | 14.9 - 44.6 mmol/day | 250 - 750 mg/day |

The reference values are to be considered as indicative only. Every laboratory should establish its own normal range.

### LIMITATION OF THE PROCEDURE

- For diagnostic purposes, the results should always be assessed in conjunction with the patient's medical history, clinical examination and other findings.

### INTERFERENCE

- Bilirubin: No interference found upto Bilirubin 10 mg/dl.
- Hemoglobin: No interference found upto 2.5 mg/dL.
- Lipemia: No interference found upto 750 mg/dL.
- These characteristics have been obtained using an automatic analyzer. Results may vary if a different instrument or a manual procedure is used.

### BIBLIOGRAPHY

1. Caraway , WT Clinchem 4,239(1963).
2. Morin LG Clinchem,20,51(1974).
3. Trivedi RC Rebar L.,Berka E.,Strong L.,Clinchem.,(1978),24,1908.

### GLOSSARY OF SYMBOL

| | |
|---|---|
|  | Consult Instruction for Use |
|  | Catalog Number |
|  | Store between |
|  | Manufacturer |
|  | Keep away from sunlight |



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