URIC ACID T FL

AU F100 CH	5 x 20 ml
AU F250 CH	5 x 50 ml
AU F402 CH	4 x 100 ml

INTENDED USE

In vitro diagnostic medical device for quantitative in vitro determination of uric acid in biological fluids (serum) and intended to aid in the diagnosis and to determination of therapy adequacy of gout or kidney diseases. The IVD is to be used on automatic random-access analyser*. The product is intended for professional use in clinical laboratories.

TEST PRINCIPLE

Uric acid in sample is oxidized to allantoin in presence of the enzyme uricase and H_2O_2 is generated. The H_2O_2 reacts with ADPS and 4-aminoantipyrine in the presence of peroxidase to form a violet dye. The intensity of color formed is proportional to the uric acid concentration and can be measured photometrically to 546 (510 - 560) nm[2,18,19].

MATERIALS PROVIDED AND COMPOSITION

REAGENT 1

F100: 4 x 20 ml (liquid) blue cap
F250: 4 x 50 ml (liquid) blue cap
F402: 4 x 80 ml (liquid) blue cap

Composition: Buffer pH 7.0, ADPS ≥ 0.2 mM, stabilizers and preservatives.

REAGENT 2

F100: 1 x 20 ml (liquid) red cap
F250: 1 x 50 ml (liquid) red cap
F402: 1 x 80 ml (liquid) red cap

Composition: Buffer pH 7.7, 4-aminoantipyrine ≥ 1 mM, uricase ≥ 500 U/l, POD > 5000 U/l, stabilizers and preservatives.

STANDARD **uric acid 5 mg/dl[x] - 5 ml**

Composition: Buffer pH 6.9, uric acid 0.005%, stabilizers and preservatives.

[x] Traceability: this method has been standardized against HPLC, according to Original formulation Gindler (1980 - U.S. Patent 4207203) - Weighed in purified material.

MATERIALS REQUIRED BUT NOT SUPPLIED

General laboratory equipment.

Analysers*: Automatic random-access[11,12] with the following specifications:
- Optical cuvettes: Vetro pirex or PMMA
- Light path: from 5 to 10 mm
- Wavelength (λ): 540 - 546 - 550 nm
- Sampling:
  Sample volume: from 2 to 50** µl
  Reagent volume 1 and 2: from 35 to 350** µl
- Reaction time: from 10 to 15 minutes
- Incubation bath: Water or Air
- Optical range: from 0.0000 to 2.5000*** Absorbance

Saline solution.
For calibrators and controls refer to paragraph "Quality control and calibration".

** Sample and reagent volumes can be adjusted to the specific characteristics of each analyzer, provided the sample/reagent ratio indicated in the "Procedure" section is respected.
***Minimum absorbance value required to ensure device performance.

REAGENT PREPARATION

Working reagent: mix 4 parts of reagent R1 with 1 part of reagent R2.

STABILITY AND STORAGE

Store all components at 2-8°C.
Stability of single reagents: up to expiration date on labels at 2-8°C.
Stability of single reagents after first opening: 60 days at 2-8°C.
Stability of **working reagent**: 15 days at 2-8°C.

PRECAUTIONS

This kit contains components classified in accordance with Regulation (EC) No. 1272/2008.

REAGENT 1

Signal words:
Danger
Hazard statements:
Causes serious eye damage (H318).
Precautionary statements:
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing (P305+P351+P338).
Wear eye protection / face protection (P280).
Immediately call a POISON CENTER / doctor (P310).
Contains: Mixture of 5-Chloro-2-methyl-4-isothiazolin-3-one and 2-methyl-2H-isothiazol-3-one (3:1). May produce an allergic reaction (EUH208).

REAGENT 2

It is not classified as hazardous.
Safety data sheet available on request (EUH210).
Contains: Mixture of 5-Chloro-2-methyl-4-isothiazolin-3-one and 2-methyl-2H-isothiazol-3-one (3:1). May produce an allergic reaction (EUH208).

STANDARD

It is not classified as hazardous.
Safety data sheet available on request (EUH210).

SPECIMEN

Serum.
Uric acid is not normally affected by additives such as heparin, ethylenediaminetetraacetic acid (EDTA), separation gels, or procoagulants, so the samples should be collected in the same manner routinely used for any laboratory test[1].
Freshly drawn serum are the preferred specimens.

Stability in serum[1]: 4 months at -20°C
14 days at 4-8°C
48 hours at 20-25°C

TEST PROCEDURE

The reference procedure was performed on the Ilab 650. However, the operating procedure can be extended to all automated random access analyzers[11,12] with comparable features, as described in the "Materials required but not supplied" section, using the indications below as a starting point:

1 - Reaction type: Endpoint
2 - Add sample: 8 µl
3 - Add working reagent: 300 µl
4 - Mix
5 - Incubate: 375.9 sec
6 - Perform the reading (1 reading every 17.9 seconds - analyser machine cycle)

PRIMARY WAVELENGTH: 546 nm
SECONDARY WAVELENGTH: 700 nm (suggested)

RESULTS CALCULATION

The analysers automatically calculate the results for each sample.

EXPECTED VALUES

Men[1,3]:	3.5 - 7.2 mg/dl	(0.21 - 0.43 mmol/l)
Women[1,3]:	2.6 - 6.0 mg/dl	(0.16 - 0.36 mmol/l)

in general population. Each laboratory should establish appropriate reference intervals related to its population.

QUALITY CONTROL AND CALIBRATION

Calibration is required with each change in reagent lot number. It is suggested to verify calibration with at least one level of an internal quality control. If control results fall outside acceptable ranges, recalibration may be necessary. For this purpose the following human based control sera are available:
QUANTINORM CHEMA - MULTINORM CHEMA
with normal or close to normal control values,
QUANTIPATH CHEMA - MULTIPATH CHEMA
with pathological control values.
If required, a multiparametric, human based calibrator is available:
AUTOCAL H

Please contact Customer Care for further information.

TEST PERFORMANCE

The URIC ACID T FL has been validated on Ilab 650 (a) Hitachi 912 (b) and Cobas Mira S (c). However, the use of the reagent can be extended to all automatic random-access analysers[11,12] with comparable features, see paragraph "Materials required but not supplied"

Sensitivity / Limit of Detection (LOD)[4, b]
The LOD is 0.04 mg/dl.

Analytical specificity:
Interferences[5, b]
interference does not occurr in the presence of:

hemoglobin	≤ 50 mg/dl
bilirubin	≤ 33 mg/dl
Intralipid	≤ 1200 mg/dl

N-acetylcysteine (NAC), metamizole and acetaminophen may cause interference in the Trinder reaction[13-15].
To avoid interference, the blood withdrawal should be performed before drug administration.

In very rare cases gammopathy may give unreliable results[16,17]

Cross reactions[6, a]
Calculeted Bias% < 9.81 (Accepted Bias%)
Calculeted Bias% = 0.68

Accuracy:
Trueness[6, a]
Total observed error (TE(o))% < 11.91 (TEA)
TE(o)% = 5.66

Precision[7, b]
Repeatability

intra-assay (n=10)	mean (mg/dl)	SD (mg/dl)	CV%
sample 1	5.03	0.02	0.46
sample 2	10.49	0.05	0.49

Reproducibility

inter-assay (n=20)	mean (mg/dl)	SD (mg/dl)	CV%
sample 1	5.03	0.05	0.97
sample 2	10.50	0.11	1.08

Measurement range[8]
0.11[b] - 30.00[c] mg/dl

Linearity[8, c]
The method is linear up to 30.00 mg/dl.
If the limit value is exceeded, it is suggested to dilute sample 1+9 with saline and to repeat the test, multiplying the result by 10.

Methods comparison[7, b]
a comparison between Chema and a commercially available product gave the following results:

URIC ACID AOX FL Chema = x
URIC ACID T FL Chema = y
85 = sample numbers

Linear regression
y = 1.016x + 0.095 mg/dl r = 0.9995

Passing-Bablok[9-10]
y = 1.018x + 0.081 mg/dl

Positive and negative Predictive Value
Positive predictive value (PPV): 88.9%
Negative predictive value (NPV): 100.0%

WASTE DISPOSAL

P501: Dispose of contents according to national/international regulations.

NOTICE TO THE USER

Any serious incident that has occurred in relation to the device shall be reported to the manufacturer and the competent authority of the Member State in which the user and/or the patient is established.

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MANUFACTURER

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SYMBOLS

Chema Diagnostica uses symbols listed below, in addition to those of the ISO 15223-1 standard (see www.chema.com - Section “Products" for definition of symbols used).

REAGENT 1	Reagent R1
REAGENT 2	Reagent R2
STANDARD	Standard
Label rev.	Rev. label

Addition, deletions or changes are indicated with a vertical line on the side of the affected paragraph.

CE 0123