

Liquick Cor-CREA ENZYMATI



DIAGNOSTIC KIT FOR DETERMINATION OF CREATININE CONCENTRATION

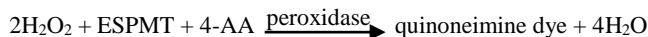
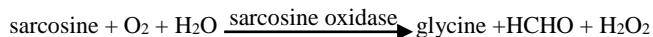
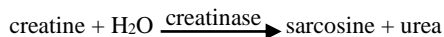
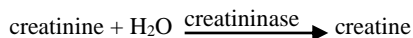
Kit name	Cat. No
Liquick Cor-CREA ENZYMATI 500	2-287
Liquick Cor-CREA ENZYMATI "bulk"	2-288

INTRODUCTION

Creatinine is a product of creatine nonenzymatic dehydration in skeletal muscle. The amount of creatinine generated and excreted by kidney is proportional to muscle mass and usually is higher in men than women. Daily creatinine generation remains fairly constant, with the exception of crushing injury or degenerative diseases that cause massive damage to muscle. Creatinine blood and urine level depends on glomerular filtration so creatinine clearance is excellent index of renal function.

METHOD PRINCIPLE

Enzymatic, colorimetric method.



The colour intensity measured at 546 nm is proportional to the creatinine concentration.

REAGENTS

Package

	Liquick Cor-CREA ENZYMATI 500	Liquick Cor-CREA ENZYMATI "bulk"
1-CREA ENZYMATI	3 x 500 ml	--*
2-CREA ENZYMATI	1 x 500 ml	--*

*reagent volume is printed on the label.

The reagents when stored at 2-8°C are stable up to expiry date printed on the package. The reagents are stable for 10 weeks on board the analyser at 2-10°C. Protect from light and avoid contamination! Do not freeze!

Components and concentrations

1-CREA ENZYMATI

Good's buffer	≤ 5%
creatinase	≤ 5%
N-ethyl-N-(3-sulfoethyl)-3-methylaniline (ESPMT)	≤ 5%
sarcosine oxidase	≤ 0.01%
ascorbate oxidase	≤ 1%
detergents, stabilizers and preservatives	

2-CREA ENZYMATI

Good's buffer	≤ 5%
creatininase	≤ 1%
peroxidase	≤ 5%
4-ammoantipyrine (4-AA)	≤ 0.01%
stabilizers and preservatives	

Warnings and notes

- Product for in vitro diagnostic use only.
- 2-CREA ENZYMATI contains sodium azide (< 0.1%) as a preservative. Avoid contact with skin and mucous membranes.

ADDITIONAL EQUIPMENT

- automatic analyzer or photometer able to read at 546 nm (550 nm);
- thermostat at 37°C;
- general laboratory equipment;

SPECIMEN

Serum and urine.

Urine preparation: before analysis urine sample should be diluted with 0,9% NaCl 2-10 times. Multiply the result by dilution factor.

Serum can be stored up to 1 day at 2-8°C. For longer storage samples should be frozen at -20°C.

Urine can be stored up to 1 day at 20-25°C, 4 days at 2-8°C. For longer storage samples should be frozen at -20°C.

Nevertheless it is recommended to perform the assay with freshly collected samples!

PROCEDURE

These reagents may be used both for manual assay and in several automatic analysers. Applications for them are available on request.

NOTE:

1-CREA ENZYMATI volume, and respectively the sample and 2-CREA ENZYMATI volumes should be adjusted to measuring photometer capacity.

Manual procedure

wavelength	546 nm (550 nm)
temperature	37°C
cuvette	1 cm

Pipette into the cuvettes:

	standard (S)	test (T)	blank (B)
1-CREA ENZYMATI	900 µl	900 µl	900 µl

Bring up to the temperature of determination. Then add:

standard	30 µl	-	-
sample	-	30 µl	-
distilled water	-	-	30 µl

Mix well and incubate for 5 minutes at 37 °C. Read the absorbance A₁ of standard samples A(S) and test sample A(T) against reagent blank (B). Then add:

2-CREA ENZYMATI	300 µl	300 µl	300 µl
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Mix well. Incubate for 5 minutes at 37 °C. Read the absorbance A₂ of standard samples A(S) and test sample A(T) against reagent blank (B). Calculate ΔA (A₂-A₁) for the test and standard.

Calculation

$$\Delta A(T) = (A_2 - A_1)T \times K$$

$$\Delta A(S) = (A_2 - A_1)S \times K$$

$$\text{Creatinine concentration [mg/dl]} = \frac{\Delta A(T)}{\Delta A(S)} \times \frac{\text{standard / calibrator concentration}}{\text{concentration}}$$

$$K = (\text{sample volume} + R1 \text{ volume}) / (\text{sample volume} + R1 \text{ volume} + R2 \text{ volume})$$

$$K = 0.756$$

REFERENCE VALUES^{2,3}

serum / plasma	mg/dl	µmol/l
newborns	0.3 – 1.0	26.5 – 88.4
infants	0.2 – 0.4	17.7 – 35.4
children	0.2 – 0.8	17.7 – 70.7
female	0.5 – 1.0	44.2 – 88.4
male	0.7 – 1.2	61.9 – 106.1
urine (morning)	mg/dl	mmol/l
female	29 – 226	2.56 – 20.0
male	40 – 278	3.54 – 24.6

It is recommended for each laboratory to establish its own reference ranges for local population.

QUALITY CONTROL

For internal quality control it is recommended to use the CORMAY SERUM HN (Cat. No 5-172) and CORMAY SERUM HP (Cat. No 5-173) for determination in serum or CORMAY URINE CONTROL LEVEL 1 (Cat. No 5-161) or LEVEL 2 (Cat. No 5-162) for determination in urine with each batch of samples.

For the calibration of manual assay the CREATININE STANDARD 2 (Cat. No 5-123), CREATININE STANDARD 5 (Cat. No 5-124).

For the calibration of automatic analysers systems the CORMAY MULTICALIBRATOR LEVEL 1 (Cat. No 5-174; 5-176), LEVEL 2 (Cat. No 5-175; 5-177) is recommended.

The calibration curve should be prepared every 4 weeks, with change of reagent lot number or as required e.g. quality control findings outside the specified range.

PERFORMANCE CHARACTERISTICS

These metrological characteristics have been obtained using automatic analyser Biolis 24i Premium. Results may vary if a different instrument or a manual procedure is used.

- **Sensitivity:** 0.08 mg/dl (7.07 µmol/l).
- **Linearity:** up to 24 mg/dl (2122 µmol/l).
- **Specificity / Interferences**
Haemoglobin up to 5 g/dl, ascorbic acid up to 62 mg/l, bilirubin up to 20 mg/dl, triglycerides up to 1000 mg/dl and creatine up to 20 mg/dl both at serum and urine do not interfere with the test.

- **Precision**

Repeatability (run to run) n = 20	Mean [mg/dl]	SD [mg/dl]	CV [%]
level 1	1.23	0.02	1.23
level 2	5.63	0.04	0.67

Reproducibility (day to day) n = 80	Mean [mg/dl]	SD [mg/dl]	CV [%]
level 1	1.17	0.04	3.63
level 2	5.51	0.30	5.42

- **Method comparison**

A comparison between creatinine values determined at Biolis 24i Premium (y) and at Prestige 24i (x) using 31 samples gave following results:

$$y = 0.9661 x + 0.0226 \text{ mg/dl};$$

$$R = 0.9903 \quad (R - \text{correlation coefficient})$$

WASTE MANAGEMENT

Please refer to local legal requirements.

LITERATURE

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