

# ZINC

ZN 0125 CH

5 x 25 ml

## INTENDED USE

Reagent for quantitative in vitro determination of zinc in biological fluids.

## SUMMARY OF TEST

Zinc is second to iron as the most abundant trace element in the body, 1.4 to 2.3 g being present in the 70-kg adult. Tissues and fluids especially rich in zinc are prostate, semen, liver, kidney, retina, bone, and muscle. Zinc is transported in blood plasma mostly by albumin and by  $\alpha_2$ -macroglobulin, with a small amount associated with transferrin and free amino acids.

## PRINCIPLE OF THE METHOD

Nitro-PAPS reacts with zinc in alkaline solution to form a purple colored complex, the absorbance of which is measured at 575 nm. Interference from copper and iron are virtually eliminated by pH and chelating additives.

## KIT COMPONENTS

### For in vitro diagnostic use only.

The components of the kit are stable until expiration date on the label.

Keep away from direct light sources.

### ZN R1 5 x 20 ml (liquid) blue cap

Composition: borate buffer 370 mM pH 8.20, salicylaldehyde 12.5mM, dimethylglyoxime 1.25 mM, surfactants and preservatives.

### ZN R2 5 x 5 ml (liquid) red cap

Composition: Nitro-PAPS 0.40 mM.

### Standard: zinc solution 200 $\mu$ g/dl - 5 ml

Store all components at 2-8°C.

## MATERIALS REQUIRED BUT NOT SUPPLIED

Current laboratory instrumentation. Spectrophotometer UV/VIS with thermostatic cuvette holder. Automatic micropipettes. Glass or high quality polystyrene cuvettes. Saline solution.

## REAGENT PREPARATION

Mix one vial of reagent R2 with a vial of reagent R1.

Stability of working reagent: 30 days at 2-8°C and 7 days at room temperature, well closed.

Stability of unopened vials: up to expiration date on labels at 2-8°C.

Stability since first opening of vials: preferably within 60 days at 2-8°C.

## PRECAUTIONS

**ZN R1: Danger.** Causes serious eye damage (H318).



Causes skin irritation (H315). Wear protective gloves. Eye protection (P280). IF ON SKIN: Wash with plenty of water (P302+P352). IF IN

EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing (P305+P351+P338). Immediately call a doctor (P310).

**ZN R2:** It is not classified as hazardous.

**Standard:** It is not classified as hazardous.

## SPECIMEN

Serum (preferred), plasma heparinate, urine

Sample is stable 7 days at 2-8°C and 1 month at -20°C.

## TEST PROCEDURE

Wavelength:	575 nm (allowed 570 ÷ 582 nm)		
Lightpath:	1 cm		
Temperature:	25, 30 or 37°C		
dispense:	blank	standard	sample
reagent	1 ml	1 ml	1 ml
water	50 $\mu$ l	-	-
standard	-	50 $\mu$ l	-
sample	-	-	50 $\mu$ l
Mix, incubate at 25, 30 or 37°C for 5 minutes. Read absorbances of standard (As) and samples (Ax) against reagent blank.			

## RESULTS CALCULATION

serum/plasma sample:

zinc  $\mu$ g/dl = Ax/As x 200 (standard value)

## EXPECTED VALUES

serum: 70 - 150  $\mu$ g/dl (10.7 - 22.9  $\mu$ mol/l)  
urine: 150 - 1200  $\mu$ g/24h (2.3 - 18.4  $\mu$ mol/24h)

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

## QUALITY CONTROL AND CALIBRATION

It is suggested to perform an internal quality control. For this purpose the following human based control sera are available:

### QUANTINORM CHEMA

with normal or close to normal control values

### QUANTIPATH CHEMA

with pathological control values.

Please contact Customer Care for further information.

## TEST PERFORMANCE

### Linearity

the method is linear up to 1000  $\mu$ g/dl.

If the limit value is exceeded, it is suggested to dilute sample 1+9 with distilled water and to repeat the test, multiplying the result by 10.

### Sensitivity/limit of detection (LOD)

the limit of detection is 5  $\mu$ g/dl.

### Interferences

no interference was observed by the presence of:

hemoglobin  $\leq$  100 mg/dl  
bilirubin  $\leq$  40 mg/dl

Lipids interfere.

### Precision

intra-assay (n=10)	mean ( $\mu$ g/dl)	SD ( $\mu$ g/dl)	CV%
sample 1	95.20	1.03	1.10
sample 2	135.70	3.47	2.60

inter-assay (n=20)	mean ( $\mu$ g/dl)	SD ( $\mu$ g/dl)	CV%
sample 1	94.28	3.49	3.70
sample 2	133.40	3.45	2.60

### Methods comparison

a comparison between Chema and a commercially available product gave the following results:

$$\begin{aligned} \text{Zinc Chema} &= x \\ \text{Zinc competitor} &= y \\ n &= 84 \end{aligned}$$

$$y = 0.902x + 8.81 \mu\text{g/dl} \quad r^2 = 0.966$$

## WASTE DISPOSAL

This product is made to be used in professional laboratories.

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

## REFERENCES

K.Ueno, T.Imamura, K.L.Cheng - Handbook of organic analytical reagents - CRC Press (1992).

Akita Abe, Sumiko Yamashita, Clin.Chem. 35/4, 552-554 (1989).

Tietz Textbook of Clinical Chemistry, Second Edition, Burtis-Ashwood (1994).

## MANUFACTURER

Chema Diagnostica

Via Campania 2/4

60030 Monsano (AN) - ITALY - EU

phone +39 0731 605064

fax +39 0731 605672

e-mail: mail@chema.com

website: http://www.chema.com

## SYMBOLS

	in vitro diagnostic medical device
	batch code
	catalogue number
	temperature limit
	use by date
	caution
	consult instructions for use