ZINC

Colorimetric Test with 5-Brom-PAPS

IVD CE

PRODUCT CODE
CE004

INTENDED USE
This kit is used for the quantitative determination of Zinc in human serum, Plasma or Urine.

CLINICAL SIGNIFICANCE
Zinc is an essential trace metal, which is second only to Iron. It is present in Zinc metalloenzymes e.g. carbonic anhydrase, alkaline Phosphatase, R.N.A and D.N.A polymerases, thimidine kinase, carboxypeptidases and alcohol dehydrogenase.
Hypozincemia is a condition where insufficient zinc is available for metabolic needs. The deficiency may lead to Anorexia, Diarrhea and Pneumonia or cognitive and motor function impairment in children.
Zinc deficiency during pregnancy can negatively affect both the mother and fetus.

PRINCIPLE
Zinc forms with 2-(5-Brom-2-pyridylazo)-5-(N-propylN-sulfopropylamino)-phenol a red chelate complex. The increase of absorbance can be measured and is proportional to the concentration of total zinc in the sample.

REAGENT COMPOSITION
ZINC MONOREAGENT

5-Br-PAPS	0.02 mmol/l
Bicarbonate buffer pH 9.8	200 mmol/l
Sodium citrate	170 mmol/l
Dimethylglyoxime	4 mmol/l
Detergent	1%

ZINC STANDARD
Zinc standard concentration 200 µg/dl or 30.6 µmol/L

REAGENT PREPARATION
The reagent and standard are ready to use.

STORAGE AND STABILITY
The reagents and standard are stable up to the stated expiry date when stored at 2-25° C.

SPECIMEN
Serum, Plasma or Urine

NORMAL RANGE
Serum/Plasma
Men: 72.6 – 127 µg/dl (11.1-19.5 µmol/l)
Women: 70.0 – 114 µg/dl (10.7-17.5 µmol/l)
(During pregnancy and menstruation, the concentration of zinc can be very low)
Children: 63.8 – 110 µg/dl (9.8-16.8 µmol/l)
New born: 49.5 – 99.7µg/dl (7.6-15.3 µmol/l)
Urine
300 – 800 µg/24h

ASSAY

Wavelength	560 nm
Cuvette	1 cm light path
Temperature	25°C / 37°C
Measurement	Against reagent blank

PROCEDURE

Pipette in to cuvettes	Blank	Standard	Sample
Zinc reagent	1000 µL	1000 µL	1000 µL
Standard	--	50 µL	--
Sample	--	--	50 µL
Mix and incubate for 10 min at 25°C or 5 min at 37°C and measure the absorbance of the sample (As) and the standard (A.std) against the reagent blank.			

CALCULATION

$$\text{Zinc Concentration (µg/dl)} = \frac{\Delta A \text{ sample}}{\Delta A \text{ standard}} \times 200 \text{ (Std.conc.)}$$

$$\text{Zinc Concentration (µmol/l)} = \frac{\Delta A \text{ sample}}{\Delta A \text{ standard}} \times 30.6 \text{ (Std.conc.)}$$

LINEARITY
The reaction is linear up to Zinc concentration of 400 µg/dl.

QUALITY CONTROL
Control serum of known concentrations should be analyzed with each run.

SYMBOL ON LABELS

Symbols	Signify	Symbols	Signify
REF	Catalogue Number	SIZE	Pack Size
	Expiry Date	VOL	Volume
	Storage Condition	LOT	Lot Number
	Instruction for Use	IVD	In Vitro Diagnostics
	Manufacturing Date		Manufacturer
	Number of Tests	2	For Single Use Only
EC REP	EC Representative	CE	European conformity

BIBILOGRAPHY

1- Johnsen and R.Eliasson. Evaluation of a commercially available kit for the colorimetric determination of zinc. International Journal of Andrology, 1987, April 10 (2):435-440.
2- R.Homster,B.Zak, Clin.Chem.31/8,1310-1313 (1985)

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