SPECTRUM

The Creative Approach to Bioscience

ZINC (Colorimetric Test with 5-Bromo-PAPS)

REF: 330 001 (2 x 25 ml) 50 test
REF: 330 002 (4 x 25 ml) 100 test

SYMBOLS IN PRODUCT LABELLING

EC REP	Authorised Representative		Use by/Expiration Date
IVD	For in-vitro diagnostic use		CAUTION. Consult instructions for use
LOT	Batch Code/Lot number		
REF	Catalogue Number		Manufactured by
	Consult instructions for use		(Xi) - Irritant
	Temperature Limitation		

Intended Use

Spectrum Diagnostics liquizyme Zinc reagent is intended for the in-vitro quantitative, diagnostic determination of Zinc in human serum, plasma or Urine.

Background

Zinc is an essential element in the nutrition of human beings, zinc is required in the genetic make-up of every cell and is an absolute requirement for all biologic reproduction.
Zinc is needed in all DNA and RNA synthesis and is required at every step of the cell cycle.
About 2 grams of zinc is distributed throughout the body human. 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.

Method

Colorimetric Method with 5-Bromo-PAPS.

Assay Principle

Zinc forms with 2-(5-Bromo-2-pyridylazo)-5-(N-propyl-N-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.

Reagents

Standard (St.) 200 µg/dl (30.6 µmol/l)

Reagent (R)

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 %

For further information, refer to the Zinc reagent material safety data sheet.

Precautions and Warnings

Do not ingest or inhalate. In case of contact with eyes or skin; rinse immediately with plenty of soap and water. In case of severe injuries; seek medical advice immediately.

Reagent Preparation

Spectrum Zinc reagents are supplied ready-to-use.

Reagent Storage and Stability

All reagents are stable until expiration date stated on label when stored refrigerated at 2 - 8 ^{o}C.

Specimen

Serum, Plasma or Urine

System Parameters

Wavelength	546 nm
Optical path	1 cm
Assay type	Colorimetric End point
Sample : Reagent Ratio	1 : 20
e.g.: Reagent volume	1 ml
Sample volume	50 µl
Temperature	25 ^{o}C or 37 ^{o}C
Zero adjustment	Against Reagent Blank (RBL)
Linearity	400 µg/dl (61.2 mmol/l)

Procedure

	Blank	Standard	Sample
Reagnt ***(R)***	1 ml	1 ml	1 ml
Standard ***(St)***	.....	50 µl	.....
Sample	.....	.....	50 µl

Mix and incubate for 10 min at 25 ^{o}C or 5 min at 37 ^{o}C.
Measure the absorbance of the sample **As** and the absorbance of standard **Ast** against reagent blank.

Calculation

$$\text{Zinc Concentration (µg/dl)} = \frac{A_{specimen}}{A_{standard}} \times 200$$

$$\text{Zinc Concentration (µmol/l)} = \frac{A_{specimen}}{A_{standard}} \times 30.6$$

Quality Control

Normal and abnormal control serum of known concentrations should be analyzed with each run.

Performance Characteristics

Precision

Within run (Repeatability)

	Level 1	Level 2
n	20	20
Mean (µg/dL)	152	240
SD	3.5	4.8
CV%	2.3	2.0

Run to run (Reproducibility)

	Level 1	Level 2
n	20	20
Mean (µg/dL)	162	268
SD	6.2	8.0
CV%	3.83	2.99

Methods Comparison

A comparison between Spectrum Diagnostics Zinc reagent and a commercial reagent of the same methodology was performed on 20 human serum.A correlation of 0.993 was obtained.

Sensitivity

When run as recommended, the minimum detection limit of this assay is 20 µg/dL.

Linearity

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

Expected values

Serum/Plasma
Male: 72.6 - 127 µg/dl (11.1 - 19.5 µmol/l)

Female: 70.6 - 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 - 99.7 µg/dl (7.6 - 15.3 µmol/l)

Urine 300 - 800 µg/dl

Interfering Substances

Triglycerides (1000 mg/dL) does not affect the results.
Hemoglobin (>500 mg/dL) does not affect the results.
Bilirubin (>40 mg/dL) does not affect the results.
Other drugs and substances may interfere.

Spectrum Diagnostics does not interpret the results of a clinical laboratory procedure; interpretation of the results is considered the responsibility of qualified medical personnel. All indications of clinical significance are supported by literature references.

Waste Disposal

This product is made to be used in professional laboratories.
Please consult local regulations for a correct waste disposal.
S56: dispose of this material and its container at hazardous or special waste collection point.
S57: use appropriate container to avoid environmental contamination.
S61: avoid release in environment. refer to special instructions/safety data sheets.

References

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.Tietz, text book of clinical chemistry and molecular diagnostics
ISBN 0-7216-0189-8

ORDERING INFORMATION	
CATALOG NO.	**QUANTITY**
330 001	2 x 25 ml
330 002	4 x 25 ml

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