

ZINC KIT

(Colorimetric method)

For the determination of Zinc in serum and urine.
(Laboratory Reagent for Professional Use Only)

Summary

Zinc is important in human for growth and sexual development. It is present in various organs and is a component of many enzymes. Zinc found in serum is totally bound to protein with over 60% being bound to albumin. Increased levels are found in patients associated with gastrointestinal disorders accompanied with nausea, vomiting, high fever and a metallic taste. Decreased levels are found in cirrhosis lung carcinomas, sickle cell anemia, acute myocardial infarction, renal failure, corticosteroid and oral contraceptive therapy.

Principle

Zinc in an alkaline medium reacts with Nitro-PAPS to form a purple coloured complex. Intensity of the complex formed is directly proportional to the amount of Zinc present in the sample.

Alkaline

Zinc + Nitro - PAPS $\longrightarrow$ Purple Coloured complex

Medium

Normal reference values

Serum : 60 - 120 $\mu\text{g/dl}$
Urine : 100 - 1000 $\mu\text{g/24 hrs}$.

It is recommended that each laboratory establish its own normal range representing its patient population.

Contents

	25 ml	75 ml
L1 : Buffer Reagent	20 ml	60 ml
L2 : Colour Reagent	5 ml	15 ml
S : Zinc Standard (200 $\mu\text{g/dl}$)	2 ml	2 ml

Storage / stability

Contents are stable at 2-8°C till the expiry mentioned on the labels.

Reagent Preparation

Reagents are ready to use.

Working reagent : Pour the contents of 1 bottle of L2 (Colour Reagent) into 1 bottle of L1 (Buffer Reagent). This working reagent is stable for at least 2 weeks when stored at 2-8°C.

Alternatively for flexibility as much of working reagent may be made as and when desired by mixing together 4 parts of L1 (Buffer Reagent) and 1 part of L2 (Colour Reagent). Alternatively 0.8 ml of L1 and 0.2 ml of L2 may also be used instead of 1 ml of the working reagent directly during the assay.

Sample material

Serum (Free from hemolysis) or urine.

Zinc is reported to be stable in serum for 7 days at 2-8°C.

Procedure

Wavelength / filter : 570 nm (Hg 578 nm) / Yellow
Temperature : R.T.
Light path : 1 cm

Pipette into clean dry test tubes labelled as Blank (B), Standard (S), and Test (T) :

Addition Sequence	B (ml)	S (ml)	T (ml)
Working Reagent	1.0	1.0	1.0
Distilled water	0.05	-	-
Zinc Standard (S)	-	0.05	-
Sample	-	-	0.05

Mix well and incubate at R.T. (25°C) for 5 min. Measure the absorbance of the Standard (Abs.S), and Test Sample (Abs.T) against the Blank, within 20 Min.

Calculations

$$\frac{\text{Abs.T}}{\text{Zinc in } \mu\text{g/dl}} = \text{X } 200 \text{ Abs.S}$$

Linearity

This procedure is linear upto 700 $\mu\text{g/dl}$. If values exceed this limit, dilute the sample with distilled water and repeat the assay. Calculate the value using the proper dilution factor.

Notes

Chelating agents such as EDTA, Oxalate and Citrate, present even in traces, prevent the formation of the colour complex, hence necessary care should be taken during the assay.

Highly lipemic samples could interfere and should be cleared by centrifugation or filtration before use. For a Seminal fluid assay, centrifuge the sample for 10 min. at 3000 RPM. Dilute the supernatant 1+ 99 with normal saline before use.

Reference

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

Tetsuo Makino, (1991) Clin. Chem. Acta. 197 : 209 - 220

System Parameters

Reaction : End Point
Wavelength : 578 nm
Zero Setting : Reagent Blank
Incub. Temp. : R.T.
Incub. Time : 5 min.
Delay Time : ---
Read Time : ---
No. of read. : ---
Interval : ---
Sample Vol. : 0.05 ml
Reagent Vol. : 1.00 ml
Standard : 200 µg/dl
Factor : ---
React. Slope : Increasing
Linearity : 700 µg/dl
Units : µg/dl



Gitanjali, Dr. Antonio Do Rego Bagh,
Bambolim Complex P.O. GOA - 403 202, INDIA

ZNC(Col)01(P)