

# N BIO – ZINC

## DIAGNOSTIC KIT FOR DETERMINATION OF ZINC ACTIVITY

KIT NAME	KIT SIZE	CAT. NO
N BIO- ZINC	0 X 20 ML	DRZIN0220M

### CLINICAL SIGNIFICANCE OF ZINC:

Zinc is present in the body with a very particular function: it is a trace element associated with a large number of enzymes (particular metalloproteins having Zn as constituent of the active site). In the biological systems these enzymes may modulate their actions, depending from the amount of Zinc. Biological oxido-reduction functions aren't possible with Zinc, due to its orbital electronic configuration. Several families of enzymes have Zn involved in the active site, a few of them in critical metabolic crossroads: a lot of enzymes are anhydases, phosphatases, RNA and DNA polymerases, kinases, peptidases and dehydrogenase.

Zinc plays a great involvement in protein synthesis and gene expression: a structural and enzymatic role. Moderate zinc deficiencies may give growth retardation in children and adolescents, mild dermatitis, hypogonadism in male, mental lethargy and impaired immune responses. Severe cases are characterized from strong dermatitis, diarrhea, recurrent infections, weight loss, psychiatric disorders and death if not treated. Iatrogenic conditions may happen in administration of anabolic and metal-chelating drugs, as penicillamine and corticosteroids, and synthetic diet therapies, mainly long-term treatment. The same happens with pregnant woman, for the high uptake of zinc by the foetus; the use of oral contraceptives produces a redistribution of zinc from plasma to erythrocytes.

### PRINCIPLE:

Zinc dissociated from proteins, in particular conditions of ionic strength gives with chromogen Nitro-PAPS a stable colored complex, which intensity of color is proportional at the concentration of Zinc in the sample.

### Components of the kit:

**REAGENT 1** (liquid) **2 x 08 mL**  
 Buffer pH 8.2 >0.1 mol/L  
 Masking agents  
 Stabilizers and detergents  
**REAGENT 2** (liquid) **02 x 02 mL**  
 Nitro-PAPS >0.1 mmol/L  
**Standard** (liquid) **01 x 02 mL**  
 Concentration: 200 ug/dl

**STABILITY:** the reagents, at 2-8°C, are stable up to the expiry date shown on the package **if not contaminated during handling.**

### STORAGE INSTRUCTIONS AND REAGENT STABILITY:

Reagent when stored at 2-8°C are stable up to expiry date mention on the package. The reagents are stable for 10 days on board the analyser at 2-10 °C.  
 Protect from light and avoid contamination.



### REAGENTS PREPARATION:

Mix R1 & R2 in the following proportion as per your requirement.

**Incompetent handling will release us from any responsibility.**

**STABILITY:** 15 days at 15-25°C (room temp.) in a dark place.

### SAMPLE:

- No haemolyzed serum or only heparin plasma (see Note 11.).  
 No EDTA-plasma!
- No haemolyzed Fresh Urine collected by standard procedure.  
 (see Note 11.) Collect a 24-hours urine sample, measure the volume and store at 2-8°C till test, within day.
- Fresh Seminal Fluid collected by standard procedure.  
 Centrifuge the sample at 3000 rpm for 10-15 minutes.  
 Dilute supernatant with saline sol. 1:100, then test; consider the dilution in the calculation.

### ASSAY PROCEDURE:

Wavelength / Filter: 578 nm  
 Temperature : 37°C  
 Cuvette : 1 cm light path.

<b>R1- Buffer Reagent</b>	400ul
<b>R2-Nitro-PAPS Reagent</b>	100ul

	BLANK(B)	STANDARD(S)	TEST
<b>Reagent Blank</b>	1000ul	----	----
<b>R1-Buffer reagent</b>	----	400ul	400ul
<b>R2-Nitro PAPS</b>	----	100ul	100ul
<b>Serum</b>	----	25ul	25ul

Mix carefully. Read the absorbance of the standard (Ast) and sample (As) against Reagent blank after 5 minutes at 37°C.  
 The color is stable for 30 minutes at room temperature.

### CALCULATION:

(As / Ast) x 200 = ug/dL of Zinc  
 (As / Ast) x 30.64 = umol/L of Zinc

### REFERENCE VALUES:

Serum/Plasma 70 -120 ug/dL (10.7 -18.4 umol/L)  
 Urine 150 -1200 ug/L die (2.3 -18.4umol/L die)  
 Seminal Fluid 2000 – 10000 ug/dL = 2 -10 mg/dL  
 (300 - 1500 umol/L = 0.3 -1.5 mmol/L)

**“Each Laboratory should check if references ranges are transferable to its own patient’s population and determine own references ranges if necessary.”**

**Linearity:** 0 – 1000 ug/dl

**Zinc (Modified Nitro-PAPS method)**

Parameters	FOR SEMI-AUTO
Mode of reaction	Endpoint Reaction
Wavelength / Filter	578nm
Slope of reaction	Increasing
Temperature	37°C
Unit	ug/dl
Blank	Reagent blank
Standard conc.	200 ug/dl
Delay Time	05sec.
Read Time	05min.
Sample volume	25ul
Reagent R1volume	400ul
Reagent R2volume	100ul
Linearity	1000 ug/dl

**REFERENCES:**

1. Textbook of Clinical Chemistry, Ed. by N.W. Tietz, W.B. Saunders Co., Philadelphia (1999).
2. Young D.S., Effect of drugs on Clinical Lab. Test, 5th Ed. AACC Press (2000).
3. Makino T. et al., Clin. Chim. Acta, 120, 127 (1982).Ver



**Genuine Biosystem Private Limited**

Plot 97 & 98, Kattabomman street,  
Parvathy nagar Extn, Old Perungalatur,  
Chennai-600063.TN.India

Ph: 044-48681845

Email: [info@gb-group.co.in](mailto:info@gb-group.co.in)

Web: [www.genuinebiosystem.com](http://www.genuinebiosystem.com)