NEO CHEM

IRON

Modified Colorimetric CAB Method

KIT NAME	KIT SIZE
NEO CHEM - IRON	2 X 50 ML

NEOGENIX
DIAGNOSTICS PVT LTD

SIGNIFICANCE

The majority of iron in the body (~3 – 3.5 g) is found in the haemoglobin of the red blood cells or their precursors in the bone marrow. Plasma contains very small fraction of iron (~ 2.5 mg). Iron is transported from one organ to another as a complex formed of ferric ions and a protein called apotransferrin, this iron-protein complex is called transferrin. The major iron-storage compound in the body is ferritin; it occurs in almost all body cells but particularly in hepatocytes. Serum iron is measured by the quantity of iron bound to transferrin, while TIBC is a direct measurement to transferrin. Elevated serum iron levels have been found in cases of hemochromatosis, hepatitis, Hepatic necrosis and hemolytic anemia. Decreased levels have been associated with iron deficiency anemia, chronic blood loss, chronic disorders and insufficient dietary iron. The TIBC varies in disorders of iron metabolism, so it is elevated in iron deficiency anemia. The measurements of both serum iron and TIBC is fundamental in evaluation and differential diagnosis of various types of anaemia, liver disease and chronic illness.

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PRINCIPLE

Iron reacts with chromazurol (B) and CTMA to form a coloured ternary complex with an absorbance measured at 630 nm. The intensity of the colour produced, is directly proportional to the concentration of iron in the sample.

KIT CONTENTS:

Name	Pack
R1-IRON Reagent	2 x 50ml
R2- Calibrator	0.5 ml

REAGENT PREPARATION, STORAGE & STABILITY

All reagents are supplied ready to use and stable until expiration date stated on label when stored refrigerated at 150C– 300C

SPECIMEN COLLECTION AND PRESERVATION

The recommended specimen is serum or heparinized plasma. Plasma specimens collected with EDTA, oxalate, or citrate as anticoagulants are unsatisfactory since they bind iron, preventing its reaction with the chromogen. Morning specimen is preferable to avoid low result due to diurnal variation. The biological half-life of iron in blood is few hours.

ASSAY PROCEDURE

Wave Length/Filter: 630 nm(600-650nm)
Temperature : 37 ^{0}C
Cuvette: 1cm Light Path

Pipette into the Cuvette:

Content	B	S	T
R1 –Iron Reagent	1000µl	1000µl	1000µl
R2 – Calibrator	-	50 µl	-
Sample	-	-	50 µl

Mix, incubate for 1 min. at 37 ^{0}C and read absorbance of the standard and sample against Reagent Blank.

CALCULATION

$$\text{Iron Conc.(µg/dl)} = \frac{\text{Abs. Sample}}{\text{Abs. Standard}} \quad \text{calibrator con}$$

SI units: (µg/dl) x 0.1791 = µmol/l

WOMEN	37 to 145 µg/dl
MEN	55 to 175 µg/dl

PERFORMANCE CHARACTERISTICS

LINEARITY:

The reaction is linear up to iron concentration of 400µg/dl, Specimens showing higher concentration should be diluted 1+1 using physiological saline and repeat the assay.

SENSITIVITY:

When run as recommended, the sensitivity of this assay is 12 µg/dl for serum iron.

SPECIFICITY / INTERFERANCES

Serum, plasma Haemolysis

No interference up to hemoglobin level of 5 g/l (0.3 mmol/l) in determining serum iron and up to 1 g/l for TIBC.

Icterus

No significant interference up to a bilirubin level of 30 mg/dl.

Lipemia

Lipemic specimens are not recommended since they may cause negative bias. Lipemic specimens can be diluted before assay and the dilution factor should be considered during calculation. Anticoagulants.

Citrate, EDTA, and oxalate should be avoided.

SYSTEM PARAMETER

Mode of reaction	End point method
Wavelength / Filter	630 nm (600 - 650nm)
Slope of reaction	Increasing
Temperature	37^{O}C
Unit	µg/dl
Blank	Reagent Blank
Calibrator conc.	Refer the Calibrator vial
Delay Time	05 sec.
Read Time	1 min
Sample volume	50µl
Reagent volume	1000µl
Linearity	400 µg/dl