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Iron Ch–DAC.Lq

IRON COLORIMETRIC TEST WITH CHROMAZUROL B

For «in vitro» use only

Store at 2-8°C

Cod 3052I100 2x50 ml

PRINCIPLE

Ferric ions in the sample react with chromazurol B and cetyltrimethylammoniumbromide forming a colored complex. The intensity of coloration, measured at 630 (620-640) nm, is proportional to iron^{1,2}.

CONTENTS AND COMPOSITION

Reagent	2x50 ml	pH 4.8
Chromazurol B		0.2 mmol/l
Cetyltrimethylammonium bromide		2 mmol/l
Acetate buffer		0.1 mol/l

Iron Standard 5 ml

Concentration is given on the label. Aqueous primary standard.

NB: Calibration with the factor or with the aqueous standard may cause bias. In these cases, it is recommended to calibrate using a serum based standard.

STORAGE AND STABILITY OF REAGENTS

Reagents are stable at 2-8°C until the expiry date shown on the label.

Indications of deterioration:

Presence of particulate material, turbidity, absorbance of the blank over 0,400 at 630 (620-640) nm (1 cm cuvette).

SAMPLES

Serum collected by standard procedures.

Iron in serum or heparinized plasma is stable for 7 days at 2-8°C.

ADDITIONAL EQUIPMENT

Analyzer, spectrophotometer or photometer able to read at 630 (620-640) nm. Dropper for 50 µl and 1,0 ml.

PRECAUTION

The kit is only for in vitro use.

All specimens must be considered potentially hazardous and handled as infectious.

REAGENT PREPARATION

Reagent and Iron Standard are provided ready to use.

PROCEDURE

Method:	end point
Wavelength :	630 (620-640) nm
Light path:	1 cm
Temperature :	16-25°C
Blank:	against reagent

1. Bring the Reagent to room temperature (16-30°C).

2. Pipette into labeled test tubes:

	Blank	Standard	Sample
Distilled Water, µl	40	-	-
Iron Standard, µl	-	40	-
Sample, µl	-	-	40
Reagent, ml	1,0	1,0	1,0

NB: Volumes of reagent, standard and samples can be proportionally changed according to the cells working volumes of using analyzers.

3. Mix thoroughly and let stand the tubes for 10 minutes at room temperature (16-25°C).

4. Read the Absorbance of the Sample (A_{Sample}) and of the Iron Standard (A_{St}) at 630 nm against the Blank.

CALCULATIONS

The iron concentration in the sample is calculated using the following general formula:

$$(A_{\text{Sample}} / A_{\text{St}}) \times C_{\text{Standard}} \times \text{Sample Dilution Factor} = C_{\text{Sample}}$$

REFERENCE VALUES

Serum and plasma⁴:

Men: 65-175 µg/dl = 11.6 – 31.3 µmol/l

Women: 50-170 µg/dl = 9.0-30.4 µmol/l

These ranges are given for orientation only; each laboratory should establish its own reference ranges.

QUALITY CONTROL

It is recommended to use the Sera N and Sera P to verify the performance of the measurement procedure.

Each laboratory should establish its own internal Quality Control scheme and procedures for corrective action if controls do not recover within the acceptable tolerances.

METROLOGICAL CHARACTERISTICS

Detection limit: 10 µg/dl = 1,8 µmol/l iron.

Linearity limit: 500 µg/dl = 89,5 µmol/l iron.

For higher values dilute sample 1/2 with distilled water and repeat measurement.

Repeatability (within run):

Mean Concentration	CV	n
111 µg/dl = 19,9 µmol/l	1,3 %	20
300 µg/dl = 53,7 µmol/l	0,8 %	20

Reproducibility (run to run):

Mean Concentration	CV	n
111 µg/dl = 19,9 µmol/l	3,0 %	25
300 µg/dl = 53,7 µmol/l	1,8 %	25

Sensitivity: 1,5 mA x dl/µg = 7,54 mA x l/µmol.

Interferences: bilirubin (< 20 mg/dl) does not interfere. Do not use hemolyzed or lipemic sera.

Other drugs and substances may interfere⁴.

These metrological characteristics have been obtained using an analyzer. Results may vary if a different instrument or manual procedures are used.

DIAGNOSTIC CHARACTERISTICS

Iron is distributed in the body in a number of different compartments: hemoglobin, myoglobin, tissues (mainly in liver, spleen, and bone marrow). Only 0.1% of total body iron is present in plasma. Serum iron concentration is affected by many physiological or pathological conditions. Day-to-day variation is quite marked in healthy people. Iron deficiency and iron overload are the major disorders of iron metabolism. However, altered iron metabolism is also related to a number of other diseases. Serum iron is increased in hemochromatosis, in acute iron poisoning, in active cirrhosis or acute hepatitis and as a result of increased transferrin levels^{3,5}. Serum iron concentration is decreased in many but not all patients with iron deficiency anemia and in chronic inflammatory disorders. Measurement of serum iron should not be used as a test for identification of iron deficiency^{3,5}.

BIBLIOGRAPHY

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