

CORMAY IBC

DIAGNOSTIC KIT FOR DETERMINATION OF IRON BINDING CAPACITY



Kit name
CORMAY IBC „bulk”

Cat. No
2-105

INTRODUCTION

Iron is the most abundant trace element in the organism. The TIBC (total iron binding capacity) is the amount of iron that serum transferrin can bind when its iron-binding sites are completely saturated. The measurement of TIBC level is useful in the diagnosis of disease conditions related with metabolism of iron.

METHOD PRINCIPLE

Serum contains the iron-binding protein transferrin, which is normally saturated with iron(III) ions to approximately one-third of its capacity. For saturation of the transferrin, serum or plasma is treated with an excess of iron(III) ions. The unbound iron is precipitated with magnesium hydroxide carbonate. After the centrifugation of the sample and determination of iron ions in obtained supernatant, the transferrin-bound iron capacity (TIBC) is defined. During calculation the dilution factor should be taken into account.

REAGENTS

Package

1-SATURATION SOLUTION
2-MAGNESIUM HYDROXIDE CARBONATE

CORMAY IBC
„bulk”
2 x 400 ml
1 x 160 g

Reagent preparation and stability

The reagents are ready to use.

The reagents when stored at 15-25°C are stable up to expiry date printed on the package.

Concentrations in the test

ferrum chloride (III) 5 mg/l
magnesium hydroxide carbonate 0.2 g/ml of serum
stabilizers 1 g/l

Warnings and notes

- Product for in vitro diagnostic use only.
- For determination of iron concentration in supernatant the Liquick Cor-FERRUM (Cat. No 3-247, 3-257, 3 258, 3-323, 3-292) is recommended.
- Contaminated glassware is the greatest source of error. The use of disposable plastic ware is recommended. Glassware should be soaked for a few hours in 2M HCl solution and then thoroughly rinsed with distilled water.

ADDITIONAL EQUIPMENT

- centrifuge;
- diagnostic kit for determination of iron concentration (eg. Liquick Cor-FERRUM);
- automatic analyser or photometer able to read at 550 nm;
- thermostat at 37°C;
- general laboratory equipment;

SPECIMEN

Serum free from hemolysis, heparinized plasma collected in plastic tubes.

Serum should be separated from red blood cells as soon as possible after blood collection.

Serum can be stored up to 6 hours at 15-25°C or up to 3 days at 2-8°C.

Nevertheless it is recommended to perform the assay with freshly collected samples!

PROCEDURE

These reagents may be used both for manual assay and on analyser Cobas Mira.

Sample preparation

Pipette into centrifuge tubes:

Serum or plasma 500 µl
1-SATURATION SOLUTION 1000 µl

Mix well and allow to stand for 5 min. at room temperature. Then add one level measuring spoonful (approx. 0.1 g) of magnesium hydroxide carbonate from bottle 2-MAGNESIUM HYDROXIDE CARBONATE, allow to stand for 30 min. at room temp. (agitate every 5-10 min.). Then centrifuge for 10 min. (at about 3000 rpm.). After centrifugations separate the clear supernatant from the precipitate and determine the iron concentration according to kit inserts for Liquick Cor-FERRUM.

Calculation

To calculate the TIBC value multiply the result of the iron determination in the supernatant by the dilution factor (equal 3). For the calculation of the unsaturated iron-binding capacity (UIBC), the serum iron content is subtracted from the TIBC.

REFERENCE VALUES ⁶

serum / plasma	µg/dl	µmol/l
TIBC	250 – 400	45 – 72

It is recommended for each laboratory to establish its own reference ranges for local population.

QUALITY CONTROL

For internal quality control it is recommended to use the CORMAY SERUM HN (Cat. No 5-172) and CORMAY SERUM HP (Cat. No 5-173) with each batch of samples.

For the calibration the IRON STANDARD 56 (Cat. No. 5-133) or IRON STANDARD 112 (Cat. No. 5-134) is recommended.

The calibration curve should be prepared every 12 weeks, with change of reagent lot number or as required e.g. quality control findings outside the specified range.

PERFORMANCE CHARACTERISTICS

These metrological characteristics have been obtained using Liquick Cor-FERRUM kit and automatic analyser Biolis 24i Premium. Results may vary if a different kit, different instrument or a manual procedure is used.

- Sensitivity:** 3.6 µg/dl (0.644 µmol/l).
- Linearity:** up to 1000 µg/dl (179 µmol/l).
- Specificity / Interferences**

Bilirubin up to 20 mg/dl, triglycerides up to 1000 mg/dl and copper up to 500 µg/dl do not interfere with the test. Haemoglobin interferes even in small amount.

- Precision**

Repeatability (run to run) n = 10	Mean [µg/dl]	SD [µg/dl]	CV [%]
level 1	33.86	0.47	1.39
level 2	317.54	1.76	0.55

Reproducibility (day to day) n = 10	Mean [µg/dl]	SD [µg/dl]	CV [%]
level 1	243.77	1.97	0.81
level 2	65.91	1.39	2.10

▪ **Method comparison**

A comparison between iron values determined at CORMAY kit on Biolis 24i Premium (y) and at Hitachi 912 with commercially available assay (x), using 102 samples gave following results:
 $y = 0.9325 x + 7.8482 \mu\text{g/dl}$;
 $R = 0.9925$ (R – correlation coefficient)

WASTE MANAGEMENT

Please refer to local legal requirements.

LITERATURE

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Date of issue: 08. 2015.

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08/15/08/15