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Version 2.0

铁离子检测试剂盒

Iron Assay Kit

Cat.No. MIK4893 **Size : 250 tests**

Technical literature is available at: www.mesgenbio.com. E-mail MesGen Technical Services if you have questions on use of this system: tech@mesgenbio.com

Description

Iron level in blood is a reliable diagnostic indicator of various disease states. Increased levels of iron concentration in blood are associated with blood loss, increased destruction of red blood cells (e.g. hemorrhage) or decreased blood cell survival, acute hepatitis, certain sideroachrestic anemias, ingestion of iron-rich diets, defects in iron storage (e.g. pernicious anemia). Decreased levels of blood iron may result from insufficient iron ingestion from diets, chronic blood loss pathologies, or increased demand on iron storage as during normal pregnancy. Simple, direct and automation-ready procedures for measuring iron concentrations find wide applications in research, drug discovery and environmental monitoring. MesGen' iron assay kit is designed to measure total iron directly in serum without any pretreatment. The improved method utilizes a chromogen that forms a red colored complex specifically with Fe^{2+}. Fe^{3+} in the sample is reduced to Fe^{2+}, thus allowing the assay for total iron concentration. The intensity of the color, measured at 520nm, is directly proportional to the iron concentration in the sample.

Key features

Sensitive and accurate. Linear detection range 0.27 mg/L (4.8 μM) to 10 mg/L (179 μM) iron in 96-well plate assay.

Simple and high-throughput. The procedure involves addition of a single working reagent and incubation for 20-40 min. Can be readily automated as a high-throughput assay for thousands of samples per day.

Improved reagent stability and versatility. The optimized formulation has greatly enhanced reagent and signal stability. Cuvette or 96-well plate assay.

Low interference in biological samples. No pretreatments are needed. Assays can be directly performed on serum samples.

Applications

Direct Assays: iron in biological samples (e.g. serum).

Drug Discovery/Pharmacology: effects of drugs on iron metabolism. Environmental Monitoring: iron in soil extracts, mineralized samples.

Kit contents (250 tests in 96-well plates)

Reagent A: 50 mL

Reagent B: 4 mL

Reagent C: 4 mL

Iron Standard: 1 mL 100 mg/L Fe^{2+}

Procedures

Note

(1). Iron chelators (e.g. EDTA) interfere with this assay and should be avoided in sample preparation.

(2). Serum or plasma samples should be clear and free of precipitates or turbidity. If not, centrifuge or filter to clarify samples prior to assay.

(3).This kit can be applied to measure Fe^{2+} (vs. total iron) content. Prepare Working Reagent by mixing 20 vol of Reagent A, 1 vol of water and 1 vol Reagent C (no reductant in the Working Reagent). The procedure is the same as described for the total iron assay.

Procedure using 96-well plate

1. Standards. Prepare 400 μL 10 mg/L Premix by mixing 40 μL 100 mg/L standard and 360 μL distilled water. Dilute standards as follows.

No.	No Premix + H_2O	Vol (μL)	Fe (mg/L)
1	100μL + 0μL	100	10
2	80μL + 20μL	100	8
3	60μL + 40μL	100	6
4	40μL + 60μL	100	4
5	30μL + 70μL	100	3
6	20μL + 80μL	100	2
7	10μL + 90μL	100	1
8	0μL + 100μL	100	0

Transfer 50 µL diluted standards and 50 µL sample into a clear flat bottom 96-well plate. For serum/plasma samples, it is recommended to run a sample blank (i.e. a 50 µL sample in a separate well).

2. Prepare enough Working Reagent by mixing 20 volumes of Reagent A, 1 volume Reagent B and 1 volume Reagent C. Fresh reconstitution is recommended. Equilibrate to room temperature before assay. Add 200 µL Working Reagent to Standards and Samples wells. (For serum/plasma samples which require a Sample Blank Control, add 200 µL Reagent A to the Sample Blank wells). Tap plate to mix.
3. Incubate 20-40 min at room temperature and read optical density at 520nm.

Procedure using cuvette

1. Prepare standards as in 96-well assay. Set up centrifuge tubes labeled Standards and Samples. Transfer 250 µL standards and samples to tubes.
2. Add 1000 µL Working Reagent to all tubes. Mix by vortexing. Incubate 20-40 min at room temperature.
3. Transfer to cuvettes and read OD at 520nm.

Calculation

Subtract OD of "0 µg/L Fe" from all other standard OD values and plot the OD against standard iron concentrations. Determine the slope using linear regression fitting. Iron concentration of the sample is calculated as

$$[\text{Iron}] = \frac{OD_{SAMPLE} - OD_{BLAN}}{\text{Slope}} \text{ (mg/L)}$$

Where OD_{BLANK} is OD values of the water blank, or Sample Blank, if a sample blank is used (e.g. serum or plasma). Typical serum iron values: 0.7-1.8 mg/L. Conversions: 10 mg/L Fe equals 179 µM, 0.001% or 10 ppm.

Materials required, but not provided

Pipeting devices and accessories.

Procedure using 96-well plate: Clear bottom 96-well plates and plate reader.

Procedure using cuvette: Cuvets and spectrophotometer for measuring OD at 520nm.

Storage conditions

The kit is shipped at room temperature. Store Reagent A at room temperature and other reagents at 4 °C. Shelf life: 12 months after receipt.

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