For Research Use Only. Not For Use In Diagnostic Procedures

Version 2.0

铜离子检测试剂盒

Copper Assay Kit

Do not eat Store at 4° C & in the dark.

Cat.No. MCK4575 **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

Copper is an essential trace element. Copper-containing enzymes play important roles in iron and catecholamine metabolism, free radical scavenging, and in the synthesis of hemoglobin, elastin and collagen. Copper is mainly present in caeruloplasmin in the liver. Low levels of copper have been associated with mental retardation, depigmentation, anaemia, hypotonia and scorbutic changes in bone. Levels of copper are key diagnostic indicator of diseases such as Wilson's disease, microcytic hypochromic anaemia and bone disease due to reduced collagen synthesis. Simple, direct and automation-ready procedures for measuring copper concentrations find wide applications in research, drug discovery and environmental monitoring. MesGen' copper assay kit is designed to measure copper with no or minimal sample treatment. The improved method utilizes a chromogen that forms a colored complex specifically with copper ions. The intensity of the color, measured at 440 nm, is directly proportional to copper concentration in the sample. The optimized formulation substantially reduces interference by substances in the raw samples.

Key features

Sensitive and accurate. Linear detection range 70 µg/L to 3000 µg/L copper in 96-well plate assay.

Simple and high-throughput. The simple procedure can be readily automated as a high-throughput assay in 96-well plates for thousands of samples per day.

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

Applications

Direct Assays: biological, environmental, food and beverage samples. Drug Discovery/Pharmacology: effects of drugs on Cu metabolism.

Kit contents (250 tests in 96-well plates)

Reagent A: 20 mL

Reagent B: 20 mL

Reagent C: 2.5 mL

Reagent D: 7.5 mL

Copper Standard: 1 mL 15 mg/L Cu2+

Precautions

Normal precautions for laboratory reagents should be exercised while using the reagents. Please refer to Material Safety Data Sheet for detailed information.

Procedures note

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

Procedure using 96-well plate:

1. Standards: transfer 100 µL dH_2O into one Eppendorf tube labeled “Blank”. Into another tube labeled “Standard”, mix 20 µL 15 mg/L Standard and 80 µL dH_2O (final 3000 µg/L Cu^{2+}).
   Samples: transfer 100 µL samples into separate tubes. If samples contain protein (e.g. serum/plasma), precipitates form. Centrifuge tubes for 2 min at 14,000 rpm and use clear supernatant for assay. For samples that do not contain protein, the mixture remains clear and centrifugation is not necessary.
2. For each assay well, Working Reagent by mixing 80 µL Reagent A, 80 µL Reagent B, 10 µL Reagent C and 30 µL Reagent D. Then transfer 200 µL Working Reagent into separate wells of a clear flat-bottom 96-well plat and tap plate to mix thoroughly. Transfer 100 µL Blank, Standard and Sample into above separate wells.
3. Incubate 5-10 min at room temperature and read optical density at 440 nm. Note: if sample OD values

are higher than the OD value for the 300µg/dL Standard, dilute sample in dH_2O and repeat assay. Multiply the results by the dilution factor.

Procedure using cuvette:

Prepare standards and samples as for 96-well assay procedure.

1. Transfer 400 µL Standards and Samples into separate cuvets.
2. Add 800 µL Working Reagent. Mix by pipetting.
3. Incubate 5-10 min at room temperature and read optical density at 440 nm.

Calculation

The copper concentration of Sample is calculated as

$$= \frac{OD_{SAMPLE} - OD_{BLANK}}{OD_{STANDARD} - OD_{BLANK}} \times 3000\ (\mu g/L)$$

OD_{SAMPLE}, OD_{BLANK} and $OD_{STANDARD}$ are optical density values of the Sample, Blank and the 3000 µg/L Standard, respectively. Conversions: 1000 µg/L Cu equals 15.5 µM, 0.0001% or 1 ppm.

General condsiderations

For scarce samples (e.g. mice serum or plasma), mix sample with dH_2O to a total of 100 µL, e.g. 50 µL serum + 50 µL dH_2O. Multiply the results by the dilution factor (2 fold).

Examples

Human serum, rat plasma, rat serum, and bovine serum were assayed in duplicate using the 96-well plate assay protocol. The copper concentrations were 97 ± 1, 104 ± 1, 101 ± 2, 78 ± 10 µg/L, respectively.

Storage conditions

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

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