Copper Assay Kit (Colorimetric)

Copper Assay Kit (Colorimetric) is a detection kit for the quantification of Copper in Biological, environmental, food and beverage.

Catalog number: ARG82148

Package: 250 tests

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INTRODUCTION

Copper is a chemical element with the symbol Cu (from Latin: cuprum) and atomic number 29. It is a soft, malleable, and ductile metal with very high thermal and electrical conductivity. A freshly exposed surface of pure copper has a pinkish-orange color. Copper is used as a conductor of heat and electricity, as a building material, and as a constituent of various metal alloys, such as sterling silver used in jewelry, cupronickel used to make marine hardware and coins, and constantan used in strain gauges and thermocouples for temperature measurement. [Provide by Wikipedia: Copper]

PRINCIPLE OF THE ASSAY

This Copper Assay Kit (Colorimetric) is a simple colorimetric assay that measures the amount of copper present in biological, environmental, food and beverage samples. The 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 O.D. 359 nm, is directly proportional to copper concentration in the sample. The optimized formulation substantially reduces interference by substances in the raw samples.

MATERIALS PROVIDED & STORAGE INFORMATION

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

Component	Quantity	Storage information
Reagent A	10 mL	4°C
Reagent B	1.5 mL	4°C
Reagent C	40 mL	4°C
Copper Standard (1.5 mg/dL Cu^{2+})	1 mL	4°C

MATERIALS REQUIRED BUT NOT PROVIDED

- Microplate reader capable of reading at O.D. 356-362 nm
- Centrifuge
- Clear flat-bottom 96 well microplate
- Deionized or Distilled water
- Pipettes, pipette tips and Multichannel micropipette reservoir

TECHNICAL NOTES AND PRECAUTIONS

- Wear protective gloves, clothing, eye, and face protection especially while handling blood or body fluid samples.
- Reagents are for research use only. Normal precautions for laboratory reagents should be exercised while using the reagents. Please refer to Material Safety Data Sheet for detailed information.
- Metal chelators (E.g., EDTA) interfere with this assay and should be avoided in sample preparation.
- All reagents should be mixed by gentle inversion or swirling prior to use. Do not induce foaming.
- Before using the kit, spin tubes and bring down all components to the bottom of tubes.
- It is highly recommended assaying the Standards and samples in duplicates.
- Change pipette tips between the addition of different reagent or samples.

SAMPLE COLLECTION & STORAGE INFORMATION

The sample collection and storage conditions listed below are intended as general guidelines. Sample stability has not been evaluated.

Serum: Collect blood in a tube with no anticoagulant. Allow the blood to clot at room temperature for 30 minutes. Centrifuge at 2500 x g for 20 minutes at 4°C. Collect the serum and assay directly.

Plasma: Collect blood with heparin or citrate and centrifuge at 2000 x g for 10 minutes at 4°C. Collect the plasma layer and assay directly.

Other liquid biological sample: Assay directly.

Note:

- Metal chelators (E.g., EDTA) interfere with this assay and should be avoided in sample preparation.
- For scarce samples (E.g., mice serum or plasma), mix sample with distilled water to a total of 100 µL, (E.g., 50 µL of serum + 50 µL of distilled water). Multiply the results by the dilution factor (2 fold).
- If samples contain protein, precipitates form. Centrifuge for 5 minutes at 10,000 x g and use clear supernatant for assay. For samples that do not contain protein, the mixture remains clear and centrifugation is not necessary.

REAGENT PREPARATION

- **Blank:** distilled water only.
- **Standard:** mix 20 µL of 1.5 mg/dL Standard and 80 µL of distilled water. (final 300 µg/dL Cu^{2+})
- **Working Reagent:** for each well, mixing 5 µL of Reagent B and 150 µL of Reagent C.

ASSAY PROCEDURE

Equilibrate reagents to room temperature. Briefly centrifuge tubes before use.

1. Add **100 µL** of **Standard, Blank** and **samples** into separate eppendorfs.
2. Add **35 µL** of **Reagent A** to each tube. Mix by vortexing.
3. Transfer **100 µL** of **Standard, Blank** and **samples** from tube into a clear flat-bottom 96-well microplate.
4. Add **150 µL** of **Working Reagent** to each well. Tap lightly to mix.
5. Incubate for **5 minutes** at **room temperature** and read the absorbance at **O.D. 359 nm** (**356-362 nm**)

CALCULATION OF RESULTS

1. The copper concentration of Sample is calculated as:

   Copper (µg/dL) = [(OD_{SAMPLE} – OD_{BLANK}) / ($OD_{STANDARD}$ – OD_{BLANK})] x 300

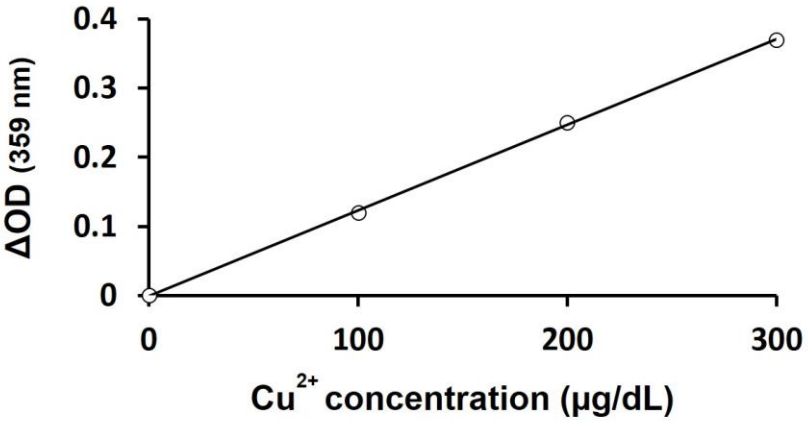
   Note:

   - OD_{SAMPLE}, OD_{BLANK} and $OD_{STANDARD}$: the O.D. 359 nm values of the Sample, Blank and the 300 µg/dL Standard.

2. Conversions: 100 µg/dL Cu equals 15.5 µM, 0.0001% or 1 ppm.

EXAMPLE OF TYPICAL STANDARD CURVE

The following figures demonstrate typical results with the Copper Assay Kit (Colorimetric). One should use the data below for reference only. This data should not be used to interpret actual results.



QUALITY ASSURANCE

Sensitivity

7 µg/dL (1.0 µM)