

Cobalt Assay Kit

(Catalog #K505-100; 100 assays; Store at room temperature)

I. Introduction:

Cobalt is a hard, lustrous, grey metal, a chemical element (symbol Co, atomic number 27 and atomic mass 58.9). Cobalt is an essential trace-element for all multicellular organisms as the active center of coenzymes called cobalamins [1]. These include vitamin B-12 which is essential for plants and animals. Cobalt is also an active nutrient for bacteria, algae, and fungi, and may be a necessary nutrient for all life. Cobalt, particularly the Co^{2+} species, forms complexes with a large number of organic and inorganic molecules with a range of extinction coefficients in the visible range. The BioVision Cobalt Assay kit takes advantage of the reaction of Co^{+2} with mercaptoethanol in basic media. Under the condition, Cobalt forms a complex with a strong absorbance band at 475 nm. The metal ions Fe^{2+} , Cu^{2+} , Ni^{2+} , Zn^{2+} , Mn^{2+} , exhibit less than 10% interference at this wavelength. The kit provides a quick simple accurate method of quantitating Co^{2+} in a variety of samples. The assay is linear in the range 3 to 50 nmol (0.18-3 μg) Cobalt, with a detection limit of ~ 3 nmol (or ~15 μM , 0.18 μg).

II. Kit Contents:

Components	K505-100	Cap Code	Part Number
Cobalt Reagent	1 ml	Red	K505-100-1
Cobalt Chloride Standard (1.0 μmol)	lyophilized	Yellow	K505-100-2

III. Storage and Handling:

Store kit at room temperature, keep tightly capped.

IV. Reagent Preparation and Storage Conditions:

Cobalt Reagent: Ready to use as supplied. Store at room temperature. Stable for at least 6 months.

Cobalt Standard: Dissolve in 1 ml dH_2O to generate a 1 mM solution. Store at room temperature.

V. Cobalt Assay Protocol:

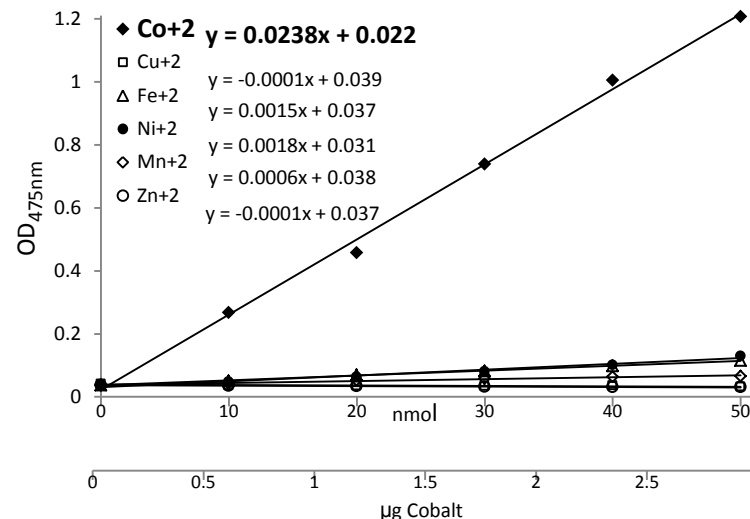
- Standard Curve Preparations:** Add 0, 10, 20, 30, 40, 50 μl of the 1 mM Cobalt Standard to a series of wells. Adjust volume to 100 μl /well with water to generate 0, 10, 20, 30, 40 and 50 nmol per well of the Cobalt Standard.
- Sample Preparation:** Sample Cobalt concentrations can vary over a rather wide range. Take samples between 2-200 μl and adjust the well volume to 200 μl with water. For unknown samples, we suggest to test several different amounts to ensure the readings are within the range of the standard curve.
- Development:** Add 10 μl of the Cobalt Reagent to each well containing Cobalt Standard or samples. Mix well.
- Incubate at room temperature for 10 min.
- Measure colorimetrically (OD at 475 nm) with a 96 well plate reader.
- Calculation:** Correct background by subtracting the 0 Cobalt Standard from all readings. Plot standard curve nmol/well vs. standard readings. Apply sample readings to the standard curve to get the amount of Cobalt in the sample wells.

The Cobalt concentration in the test samples:

$$C = \text{Ay/Sv (nmol/ml, } \mu\text{M)}$$

Where: Ay is the amount of Cobalt (nmol) in your sample from the standard curve.
Sv is the sample volume (ml) added to the sample well.

Cobalt molecular weight: 58.9 g/mol.



Cobalt Standard Curve: Assays were performed following the kit protocol.

VI. References

- G. Loeffler (2005). *Basiswissen Biochemie*. pp. 606

RELATED PRODUCTS:

- Iron Assay Kit
- Nickel Assay Kit
- Calcium Assay Kit
- Phosphate Assay Kits
- Ammonia Assay Kit
- Lactate Assay Kit
- Glucose Assay Kit
- Pyruvate Assay Kit
- Glycogen Assay Kit
- Uric Acid Assay Kit
- Ethanol Assay Kit
- Fatty Acid Assay Kit
- Cholesterol Assay Kit
- Triglyceride Assay Kit
- Ascorbic Acid Assay Kit
- Apoptosis assay kits
- Cell Proliferation Assay Kits

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