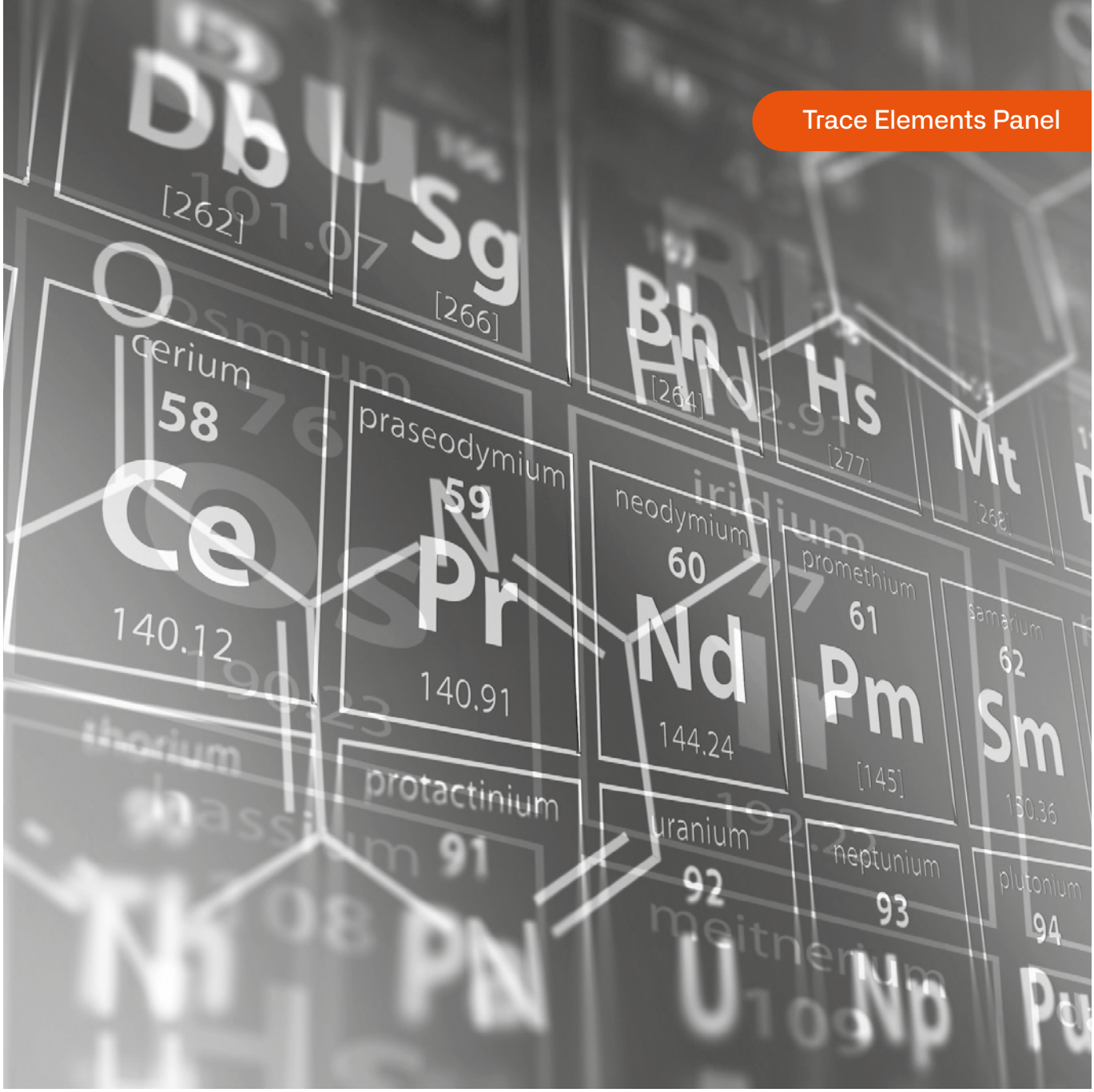

Product Sheet
Copper - PAESA

BioSystems

Clinical analysis

human - centred biotech

Copper - PAESA

Trace Elements Panel

What is Copper?

Copper is an essential trace mineral in human nutrition and a component of many proteins and metalloenzymes. Is essential for maintaining the strength of the skin, blood vessels, epithelial and connective tissue throughout the body and plays a role in the production of hemoglobin, myelin, melanin and it also keeps thyroid gland functioning normally. Copper is absorbed from daily food intake, and excess is excreted through bile produced in your liver. Ceruloplasmin is the protein responsible for the transportation of it around the body (90% of all serum copper is bind to Ceruloplasmin).

Why measure Copper?

Reagent for the measurement of copper concentration in human serum, plasma and urine for the assessment of its imbalance in the general population.
The most significant clinical application of copper determination is its association with hepatolenticular degeneration or Wilson's disease, and the decrease in the synthesis of ceruloplasmin that results in low serum cooper levels. Other diseases associated with decreased serum copper are bone and joint osteoarthritis and osteoporosis or Menkes' syndrome.

Reference values and pathologies

Normal values:

- Serum/plasma: 70-140 µg/dL = 10.9-21.9 µmol/L
- Urine: <60 µg/24h = <1.0 µmol/24h

These ranges are given for orientation only; each laboratory should establish its own reference ranges.

Decreased levels (hypocupremia):

- Higher frequency in premature babies or malnourished children, causing growth problems and bone fractures
- Menkes' disease is a rare hereditary genetic disorder of copper metabolism that leads to a deficiency of its absorption at the gastrointestinal level, affecting the nervous system. In adults, the deficiency can be caused by gastrointestinal conditions (Crohn's disease, celiac disease) or high zinc intakes

Increased levels (hypercupremia):

- Excess of dietary supplements rich in copper
- Ingestion of contaminated water or environmental exposure
- Wilson's disease is a rare inherited disorder that causes copper to accumulate in the liver, brain, and other vital organs with fatal results if left untreated

Method

Copper (Cu^{2+}), freed from ceruloplasmin, its carrier protein, and reduced to Cu^{+}, forms with a specific complexant DiBr-PAESA a stable coloured complex, the intensity of which is directly proportional to the concentration of copper present in the sample.

Performance characteristics

Method:	Copper-PAESA
Analysis mode:	Differential bireagent
Detection limit:	11.0 µg/dL (serum) / 2.08 µg/dL (urine)
Linearity limit:	500 µg/dL (serum) / 50 µg/dL (urine)
Quantification limit:	60.6 µg/dL (serum) / 5.70 µg/dL (urine)
Wavelength:	580 nm (600 nm)
On board stability:	2 months at 2-8 ºC (work reagent)
Repeatability:	1.8% at 133 µg/dL
Reproducibility:	2.6% at 133 µg/dL
Sample type:	Serum or heparinized plasma collected by standard procedures/urine
Interferences:	Bilirubin (up to 30 mg/dL), hemolysis (hemoglobin up to 500 mg/dL) and lipemia (triglycerides up to 350 mg/dL) do not interfere. Other drugs and substances may interfere

Reagents

Product	Code	Presentation	Format
Manual	11837	RA1-32 mL + RA2-8 mL + RB-10 mL + S-1 x 3 mL	Liquid
Biochemistry Calibrator (Bovine/Human)	18011 - 18044	5 x 5 mL	Lyophilized
Biochemistry Control Level I (Bovine/Human)	18009 - 18042	5 x 5 mL	Lyophilized
Biochemistry Control Level II (Bovine/Human)	18010 - 18043	5 x 5 mL	Lyophilized

**Standard included in reagent kit*

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