COPPER URINE

Quantitative colorimetric determination of copper in the urine (Cupruria) with DiBr-PAESA method

TEST SUMMARY

Copper (Cu) is an important component of numerous enzymes and is found above all in plasma bound to ceruloplasmin.
Copper not absorbed and excess copper, derived from biliary excretion, is mainly eliminated by faeces.
Only a small part is found in the urine.
Excess and deficiency copper can be both acquired and inherited.
An increase of copper in the urine may be associated with Wilson's disease or other copper intoxications.

PRINCIPLE OF THE TEST

The cupric ions react with the chromogen Di-Br-PAESA forming a blue compound, which intensity is proportional to the copper concentration present in the sample.

SAMPLES

Urine (24 hours).
Stability: 8 days at 2-8°C.

REAGENTS

Reagent A:	Acetate buffer 0.1 M pH 4.9; reducing agents and preservatives.
Reagent B:	3,5 Di-Br-PAESA.
Blank Reagent:	Solution for blank reagent
Standard:	Ion copper 10 µg/dL; preservatives.

MATERIAL REQUIRED BUT NOT SUPPLIED

Normal laboratory equipment. Spectrophotometer UV/VIS with thermostatation. Automatic Micropipette. Cuvette in optical glass or monouse in optical polystyrene. Distilled water.

PRECAUTIONS

Reagent may contain not reactive and conservative components. It is opportune to avoid contacts with the skin and do not swallow. Perform the test according to the general "Good Laboratory Practice" (GLP) guidelines.

REAGENTS PREPARATION

Prepare the Work Reagent mixing in equal quantity the Reagent A with Reagent B.
Work Reagent is stable 20 days at room temperature.

Reagents are stored at 2-8°C and are stable until expiration date on label if not contaminated during use.

Warning: Reagent A at low temperature forms a precipitate. In this case, place Reagent A in a water bath for 5 minutes at 30-35°C and mix by inversion.

PROCEDURE

Kind of analysis:	End point
Reading time:	10 minutes
Colour stability:	30 minutes
Wavelength:	580 nm (570-590)
Temperature:	20-25°C
Lightpath	1 cm
Zero:	Blank Reagent

REAGENTS	BLANK	STANDARD	SAMPLE
Work Reagent	1 ml	1 ml	1 ml
Blank reagent	300 µl	--	--
Standard	--	300 µl	--
Sample	--	--	300 µl

Mix and wait for 10 minutes then read the absorbances against the blank at 580 nm.
The colour is stable for 30 minutes.

CALCULATION

COPPER (µg/dL)

$$\frac{A\ (sample)}{A\ (standard)} \times 10$$

COPPER (µg / URINE 24h)

Copper (µg/dL) x dL urine 24h

CONVERSION FACTOR

Copper (µg/dL) x 0.1573 = Copper (µmol/L)

EXPECTED VALUES

Copper / Urine 24 ore

≤ 60 µg/24h (≤ 0.944 µmol/24h)

Every laboratory should establish own reference intervals in accordance with own population.

NOTE

- Is possible to make the reading even at 600 nm. In that case the reading gave absorbance's values that are about 30% lower than the ones obtained in the declared reading range.
- As with any diagnostic procedure, if the results are incompatible with the clinical presentation, the doctor should evaluate the data obtained using this test in light of other clinical information.
- Only for IVD use.

CALIBRATION/QUALITY CONTROL

It is suggested to perform an internal quality control using control serum with known copper values.

TEST PERFORMANCE

Sensitivity/limit of detection
The method is able to discriminate until 3 µg/dL.

Linearity
The method is linear up to 200 µg/dL.

WASTE DISPOSAL

Product is intended for professional laboratories. Waste products must be handled as per relevant security cards and local regulations.

PACKAGING

CODE CC02160	(120 TESTS)	
Reagent A	3 x 20 ml	(liquid)
Reagent B	3 x 20 ml	(liquid)
Blank Reagent	1 x 20 ml	(liquid)
Standard	1 x 10 ml	(liquid)

REFERENCES

Pasquinelli F., Diagnostica e Tecniche di Laboratorio, (pag..: 1099-1102) Rossini Ed. (1984).
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Ciuti R., Galli A., Giorn. It. Chim. Clin. 12 (2): 91-100 (1987).
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SYMBOLS

IVD	Only for IVD use
LOT	Lot of manufacturing
REF	Code number
	Storage temperature interval
	Expiration date
	Warning, read enclosed documents
	Read the directions
	Biological risk

Mod. 01.06 (ver. 2.1 – 10/07/2019)

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