DIAGNOSTIC COLORIMETRIC ASSAY

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OTHER INFORMATION

KEYWORDS

Diagnostic, assay, colorimetric, wilson's disease, menkes, copper, neurodegenerative

CATEGORIZED AS

» **Medical**

» Diagnostics

» **Research Tools**

» Other

» **Sensors & Instrumentation**

» Medical

RELATED CASES

2016-159-0

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,605,799	03/31/2020	2016-159

BRIEF DESCRIPTION

Hyper-accumulation of copper in biological fluids and tissues is a hallmark of pathologies such as Wilson’s and Menkes diseases, various neurodegenerative diseases, and toxic environmental exposure. Diseases characterized by copper hyper accumulation are currently challenging to identify due to costly diagnostic tools that involve extensive technical workup.

To solve these problems, UC Berkeley researches developed a simple yet highly selective and sensitive diagnostic tool along with new materials that can enable monitoring of copper levels in biological fluid samples without complex and expensive instrumentation. The diagnostic tool includes a robust three-dimensional porous aromatic framework (PAF) densely functionalized with thioether groups for selective capture and concentration of copper from biofluids as well as aqueous samples. The PAF exhibits high selectivity for copper over other biologically relevant metals, with a saturation capacity reaching over 600 mg/g. The researchers were able to use the diagnostic tool, which included a colorimetric indicator, to identify aberrant elevations of copper in urine samples from mice with Wilson’s disease and also traced exogenously added copper in serum.

SUGGESTED USES

- Diagnostic tool for copper hyper accumulation diseases (e.g., Wilson's, Menkes, various neurodegenerative diseases, and toxic environmental exposure)

ADVANTAGES

- Quantitative, highly selective and sensitive assay
- No need for expensive instruments (such as ICP-MS or atomic absorption spectroscopy)

RELATED MATERIALS

- Copper Capture in a Thioether-Functionalized Porous Polymer Applied to the Detection of Wilson’s Disease - 06/10/2016

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Thiophosphorodichloridate Reagents For Chemoselective Histidine Bioconjugation

- Puromycin Activity-Based Sensing Probes For Molecular Imaging And Histochemistry
- Activity-Based Ratiometric FRET Probe Detects the Changes in Labile Copper Pools
- Homoallylamines As Formaldehyde-Responsive Triggers With Imaging Applications
- Urea-Oxaziridine Library Synthesis And Applications
- Tandem Activity-Based Sensing and Labeling Strategy for Reactive Oxygen Species Imaging
- Fluorescent Probe for Selective Imaging of Carbon Monoxide in Living Cells Using Palladium-Mediated Carbonylation

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