Determination of Cadmium in Brown rice Samples by Fluorescence Spectroscopy Using a Fluoroionophore after Purification of Cadmium by Anion Exchange Resin.

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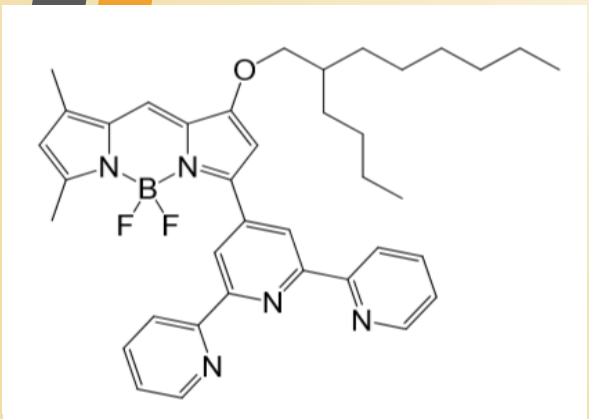
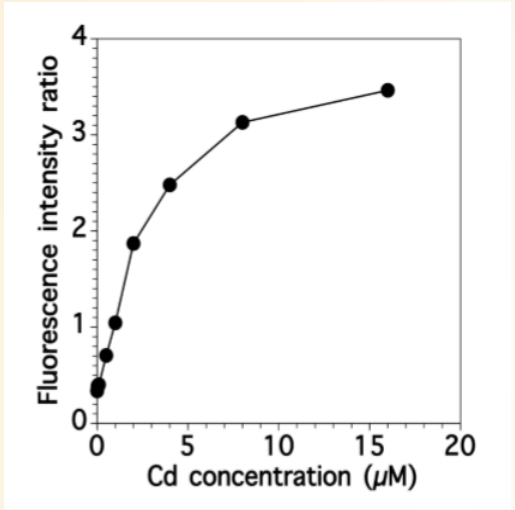
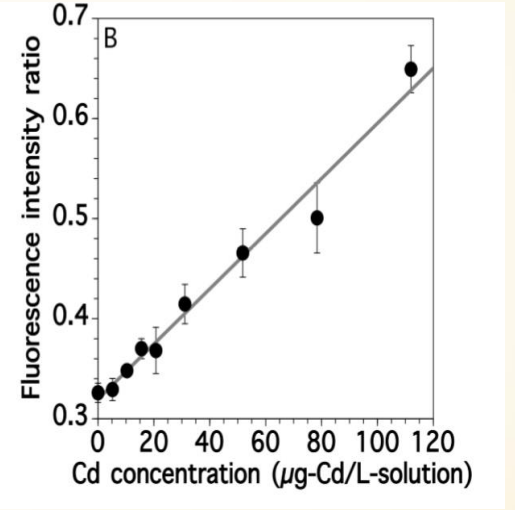
A novel methodology for determination of Cd on Brown rice is proposed using Fluorescence spectroscopy. Rice samples were grinded and treated with HCl. The Cd was recovered using a anion Exchange resin. The recovered solution was added to a fluoroionophere (BDP-TPY). Before acquiring data through fluorescence Spectroscopy the solution was titrated to set the pH over 7 since protonation of BDP-TPY can affect its fluorescence spectra. Measurements were aquired using a Jasco FP-6600 spectrofluorometer in a quartz cell.



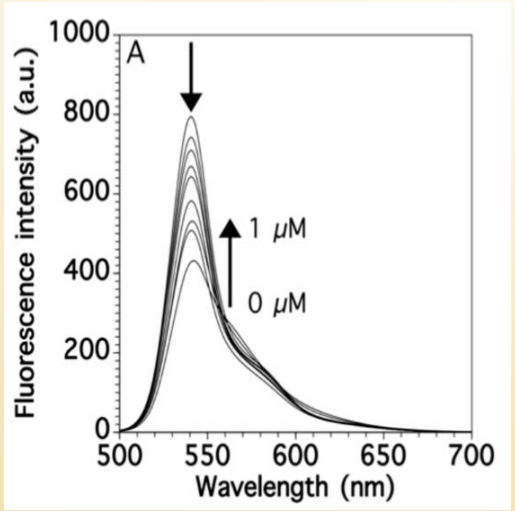
2,2´:6´,2´´-terpyridine-substituted BODIPY (BDP-TPY)



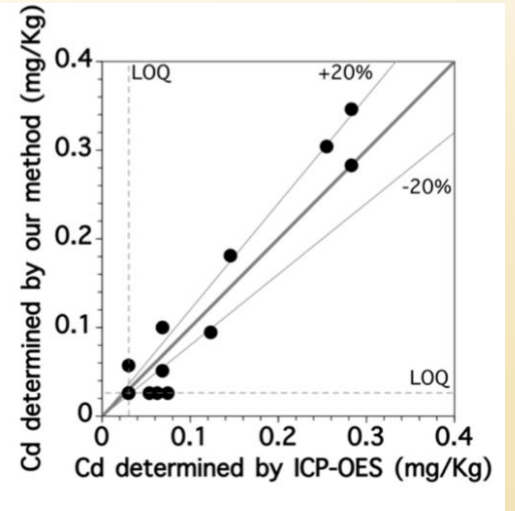
A Fluorescence standard curve was analyzed to determine concentration vs fluorescence for the BDP-TPY-Cd compound



Fluorescence intensity ratio of F539 and F562 bands was analyzed with a linear regression method (R^2=0.985) and set the detection limit at 3.8 µg of Cd



Fluorescence spectra of BDP-TPY-Cd compounds was collected and analyzed. As the concentration of the Cd ion increases a new fluorescence band appeared at 562nm (F562) reducing the fluorescence of the original band at 539 nm (F539)



Comparison of the proposed methodology and ICP-OES standard measurement.

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