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[\[PDF \(557K\)\]](#) [\[References\]](#)**L-Cysteine-capped CdTe Quantum Dots as a Fluorescence Probe for Determination of Cardiolipin**[Wenfeng ZHAO](#)¹⁾, [Yingsing FUNG](#)¹⁾, [Waisum O](#)²⁾ and [M. P. L. CHEUNG](#)²⁾

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This paper described the investigation of surface-modified quantum dots (QDs) as a fluorescence probe for the detection of cardiolipin. A single-step method for preparation of non-toxic and photo-stable cadmium telluride (CdTe) QDs capped by L-cysteine in aqueous solution was developed. The prepared QDs were characterized by high-resolution transmission electron microscopy, X-ray diffraction spectrometry, Fourier transform infrared spectrometry and spectrofluorometry. These functional QDs were used as a fluorescence probe for cardiolipin determination based on the fluorescence quenching. The optimum fluorescence intensity was found to be at pH 7.4 with QDs concentration of $4 \times 10^{-5} \text{ mol L}^{-1}$. The effect of other phospholipids on the intensity of CdTe QDs showed a low interference response. Under optimized conditions, the quenched fluorescence intensity was linear with the concentration of cardiolipin in the range of $1.33 \times 10^{-7} - 10.4 \times 10^{-7} \text{ mol L}^{-1}$ ($r = 0.9976$) and a detection limit ($S/N = 3$) of 18.5 nmol L^{-1} . The proposed method was applied to the determination of cardiolipin content of HepG2 cell samples before and after oxidative stress with satisfactory results.

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