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# Exploiting CdSe/ZnS core-shell photocatalyst modified with cytochrome *c* for epinephrine determination in drugs utilized in cardiopulmonary resuscitation

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## Abstract

This work presents the development and application of a biosensor based on cadmium selenide/zinc sulphide core-shell quantum dot modified with the redox protein cytochrome *c* (CdSe/ZnS-Cytc) for the photoelectrochemical determination of epinephrine (EP). The photoactive biocomposite was immobilized on the surface of a glass substrate modified with indium doped tin oxide (CdSe/ZnS-Cytc/ITO). The photoactive film was characterized by electrochemical impedance spectroscopy and the photocurrent measurements were obtained by chronoamperometry using a LED light lamp as source of irradiation. After the experimental parameters optimization, the biosensor presented a good response for EP oxidation in a wide linear concentration range between 1  $\mu\text{mol L}^{-1}$  and 1.2  $\text{mmol L}^{-1}$  (with  $r=0.999$ ;  $n=9$ ). A detection limit of 2  $\text{nmol L}^{-1}$

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