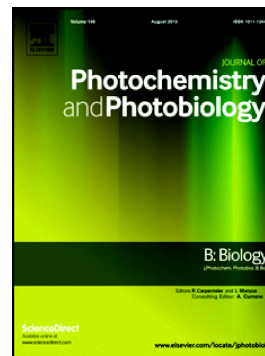


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Biofabrication of morphology improved cadmium sulfide nanoparticles using *Shewanella oneidensis* bacterial cells and ionic liquid: For toxicity against brain cancer cell lines

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Abstract

The present work determines the anticancer activity of bio-mediated synthesized cadmium sulfide nanoparticles using the ionic liquid and bacterial cells (*Shewanella oneidensis*). Bacterial cells have been exposed to be important resources that hold huge potential as ecofriendly, cost-effective, evading toxic of dangerous chemicals and the alternative of conventional physiochemical synthesis. The *Shewanella oneidensis* is an important kind of metal reducing bacterium, known as its special anaerobic respiratory and sulfate reducing capacity. The crystalline nature, phase purity and surface morphology of biosynthesized cadmium sulfide nanoparticles were analyzed by Fourier transform infrared spectroscopy, X-ray diffraction, Field emission scanning electron microscopy, Energy dispersive spectroscopy and Transmission electron microscopy. The use of imidazolium based ionic liquids as soft templating agent for controlling self-assembly and crystal growth direction of metal sulfide nanoparticles has also advanced as an important method. The microscopic techniques showed that the nanoparticles are designed on the nano form and have an excellent spherical morphology, due to the self-assembled mechanism of ionic liquid assistance. The antitumor efficiency of the cadmium sulfide nanoparticles was investigated against brain cancer cell lines using rat glioma cell lines. The effectively improved nano-crystalline and morphological structure of CdS nanoparticles in

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