**Carbon-dot wrapped ZnO nanoparticle-based photoelectrochemical sensor for selective monitoring of H2O2 released from cancer cells**

This study reports on a simple approach for the fabrication of an electrode modified with biocompatible C-dot wrapped ZnO nanoparticles for selective photoelectrochemical monitoring of H2O2 released from living cells. The biocompatibility of the ZnO nanoparticles was confirmed through in-vitro cellular testing using the MTT assay on Huh7 cell lines. The ZnO nanoparticles wrapped with dopamine-derived C-dots possess numerous catalytically active sites, excessive surface defects, good electrical conductivity, and efficient separation ability of photo-induced electrons and holes. These properties offer highly sensitive and selective non-enzymatic photo-electrochemical monitoring of H2O2 released from HeLa cells after stimulation with N-formylmethionyl-leucyl-phenylalanine. The sensor has a wide linear range (20–800 nM), low detection limit (2.4 nM), and reliable reproducibility, this implying its suitability for biological and biomedical applications.