

Cell chip with RGD peptide layer to detect toxic effects of quantum dots on neural cells

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In this study, we report a neural cell chip that can detect cytotoxicity of CdSe/ZnS quantum dots (QDs) with high sensitivity. QDs with different diameter were capped with cationic and anionic ligands to fabricate water-soluble QDs for the assessment of its toxic effects on human neuroblastoma cells. The ligand- and concentration-dependent toxicity of QDs were evaluated by trypan blue, MTT viability assay and differential pulse voltammetry (DPV). As a result, cell chip based on DPV method was found to be best for assessing the cytotoxicity of ligand-capped QDs at very low concentrations (1–10 µg/mL). Hence, the cell chip can be applied for evaluating the toxicity of various kinds of functional nanoparticles. **Acknowledgments:** This work was supported by the National Research Foundation of Korea (NRF) grant funded by the Korea government (MEST) (2012-0000163) and by the Nano/Bio Science & Technology Program (M10536090001-05N3609-00110) of the Ministry of Education, Science, and Technology (MEST) and by the Ministry of Knowledge Economy (MKE) and Korea Institute for Advancement in Technology (KIAT) through the Workforce Development Program in Strategic Technology.