

Fabrication of neural cell chip to detect cytotoxicity of silica nanoparticles

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Silica nanoparticles (SNP) have been widely used as a functional cargo due to its less toxicity and ease of fabrication. In this study, we fabricated a neural cell chip to detect the potential toxicity of inorganic nanoparticles based on the electrochemical method. Cysteine containing RGD peptide was immobilized on the electrode surface for enhancing the cellular adhesion, and electrochemical technique was applied to detect cytotoxicity of SNP. As a result, the voltammetric signals decreased with increasing the concentrations of SNP, as well as increasing incubation time. MTT viability assay was conducted to validate electrochemical findings. This fabricated neural cell chip can be a potentially useful tool for monitoring the effects of various inorganic particles. Acknowledgments: This work was supported by the National Research Foundation of Korea (NRF) grant funded by the Korea government (MEST) (2010-0000845) and by the Nano/Bio science & Technology Program (M10536090001-05N3609-00110) of the Ministry of Education, Science and Technology (MEST) and by Ministry of Environment of the Republic of Korea as "The Eco-technopia 21 project".