

Fabrication of Cell Chip to Detect Toxic Effects of Doxorubicin on Human Neural Stem Cells

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In this study, we report a toxicity of doxorubicin, a well-known chemotherapeutic agent, to human neural stem cells. Cysteine-containing RGD peptide (RGD-MAP-C) was immobilized on gold nanoparticle (Au-NPs) modified ITO surface, followed by seeding cells on the fabricated surface. The electrochemical properties of human neural stem cells (HB1.F3) was then confirmed by cyclic voltammetry and ITO/60nm Au-NPs/RGD-MAP-C peptide modified electrode was found to be best for enhancing redox signals from HB1.F3 cells. Finally, voltammetric responses of doxorubicin treated HB1.F3 cells were monitored and showed decrease of current intensities with increasing the concentrations of doxorubicin. Our fabricated stem cell chip can be used as easy and rapid tool for stem cell research. Acknowledgments: This work was supported by the National Research Foundation of Korea (NRF) grant funded by the Korea government (MEST) (2011-0000384) and by the Nano/Bio Science & Technology Program (M10536090001-05N3609-00110) of the Ministry of Education, Science and Technology (MEST).