Isolation of Tumor Cell and Normal Cell from Tissue using Gradient Surface in Cell-Chip

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Highly sensitive detection method of tumor cells has been widely studied as increasing concern of health. Nevertheless, current detection methods for biopsy are still time consuming and requires well-trained labors. Therefore fast and accurate method for the detection of low concentration of tumor cell are required. In this study, we developed micro chip to isolate tumor cells from tissue of containing tumor used gradient surface in cell-chip for the fast detection of it. We fabricated microchip using PDMS and its surface gradient was treated by plasma. Pretreated tissue containing tumor was cultured in microchip. Morphologies of tumor cells and normal cells were investigated to confirm cultivation of cells. Hydraulic force was introduced to isolate tumor cells for cell mixtures adhered on the gradient surface in microchip. As a result, tumor cells were isolated efficiently in microchip by the difference of coherence force between cell membrane and gradient surface. This method suggested here can provide simple and fast detection tool of tumor cells in early stage by physical isolation of it from tissue using hydraulic force. Acknowledgment : This work was supported by the Korea Science and Engineering Foundation (KOSEF) grant funded by the Korea government(MOST). (No.M10755160002-07N5516-00210)