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TITLE

Regulation of cancer cell adhesion on biocompatible polymer-coated surfaces

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Cell adhesion has been focused in many scientific fields such as tissue engineering and medicine. There are many researches to develop biocompatible polymers on which blood cells and the other types of cells cannot adhere. However there are few biocompatible polymers that allow the adhesion of cancer cells. The regulation of cancer cell adhesion by biocompatible polymers will open the way for a new cancer therapy. In this study, cancer cell adhesion onto several biocompatible polymer-coated surfaces (poly (2-methoxyethyl acrylate): PMEA, poly (2-hydroxyethyl methacrylate): PHEMA, and poly (2-methacryloyloxyethyl phosphorylcholine-co-buthyl methacrylate): PMPC) were compared. Also, the adhesion on polyethylene terephthalate (PET) surface and fibronectin (FN)-coated surface were compared as experimental controls which allow cancer cell adhesion. Breast cancer cell (MDA-MB-231) adhesion on polymer surfaces within 10 min was in the order of PMPC, PHEMA, PMEA < PET < FN. On the other hand, the cell adhesion within 1 h was in the order of PMPC < PHEMA < PET < PMEA ≤ FN. Moreover, the cell shapes on the polymer-coated surfaces were compared after 1 day culture. The cells on PMEA- and PHEMA-coated surfaces did not spread compared with the cells on FN-coated surfaces and PET surface. These results indicated that cell adhesion and shape can be regulated by biocompatible polymers that do not allow the adhesion of blood cells. Now, we are focusing on the difference of cell adhesion between 10 min and 1 h to investigate cell adhesion mechanism.

Biography

T. Hoshiba got his Ph.D in 2007 from Tokyo Institute of Technology and studied as a postdoctoral fellow in National Institute for Materials Science for 4 years. He has started to work as an assistant professor in Yamagata University from August, 2011.