World Academy of Science, Engineering and Technology
International Journal of Biomedical and Biological Engineering
Vol:11, No:01, 2017

Physiological Normoxia and Cellular Adhesion of Diffuse Large B-Cell Lymphoma Primary Cells: Real-Time PCR and Immunohistochemistry Study

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Abstract : Cell adhesion is of fundamental importance in the cell communication, signaling, and motility, and its dysfunction occurs prevalently during cancer progression. The knowledge of the molecular and cellular processes involved in abnormalities in cancer cells adhesion has greatly increased, and it has been focused mainly on cellular adhesion molecules (CAMs) and tumor microenvironment. Unfortunately, most of the data regarding CAMs expression relates to study on cells maintained in standard oxygen condition of 21%, while the emerging evidence suggests that culturing cells in ambient air is far from physiological. In fact, oxygen in human tissues ranges from 1 to 11%. The aim of this study was to compare the effects of physiological lymph node normoxia (5% O2), and hyperoxia (21% O2) on the expression of cellular adhesion molecules of primary diffuse large B-cell lymphoma cells (DLBCL) isolated from 10 lymphoma patients. Quantitative RT-PCR and immunohistochemistry were used to confirm the differential expression of several CAMs, including ICAM, CD83, CD81, CD44, depending on the level of oxygen. Our findings also suggest that DLBCL cells maintained at ambient O2 (21%) exhibit reduced growth rate and migration ability compared to the cells growing in normoxia conditions. Taking into account all the observations, we emphasize the need to identify the optimal human cell culture conditions mimicking the physiological aspects of tumor growth and differentiation.

Keywords : adhesion molecules, diffuse large B-cell lymphoma, physiological normoxia, quantitative RT-PCR
Conference Title : ICTMC 2017 : International Conference on Traditional Medicine and Cancer
Conference Location : Singapore, Singapore
Conference Dates : January 08-09, 2017