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Umbilical cord derived mesenchymal stem cell enhanced the expression of myeloid lineage related antigens on differentiated hematopoietic stem cell

Mohadese Hashem Boroojerdi
University Putra Malaysia, Malaysia

It has been shown that mesenchymal stem cell (MSC) execute the regulation of hematopoietic stem cell (HSC) differentiation both at *in vitro* culture and *in vivo* through cell-to-cell contact and secreted soluble growth factors. We hypothesized that culturing the HSC in the presence of MSC could enhance HSC differentiation toward myeloid lineage. In order to check the effect of MSC on HSC differentiation status, HSC were cultured in the presence (test group) and absence (control group) of MSC for 7 days, then 1×10^3 HSC from test and control group were harvested and cultured for 14 days in HSC-CFU complete media with EPO to do colony-forming assay. The numbers of white and red colonies were scored using phase contrast microscope. With the purpose of assessing the effect of MSC on HSC antigen expression pattern after differentiation, colonies were mixed and cells were stained by the proper monoclonal antibodies. Our result showed that the numbers of white and red colonies were higher after differentiation in test group as compared to the control group. Flow cytometry analysis showed higher percentage of myeloid lineage related antigens (CD33) in HSC that were expanded in the presence of MSC. On the other hand, erythroid lineage related antigens (CD235a and CD71), and lymphoid lineage related antigens (CD10) showed lower expression when HSC were co-culture with MSC. Our result showed that HSC expanded in the presence of MSC were more motivated towards myeloid lineage differentiation as compared to HSC expanded alone when analyzed via immunophenotyping. These results suggest that MSC could encourage HSC differentiation towards myeloid lineages.

Biography

Mohadese Hashem Boroojerdi has completed her Master's and PhD from Faculty of Medicine and Health Science, University Putra Malaysia. She has published 9 research and review papers during her Master's and PhD and some more review and research articles based on her PhD project are in process. She is interested in areas involving cancer biology, immunology, tissue engineering, gene therapy, biomedical research, cellular and molecular biology, tumors and neurological disorders namely stem cell therapy.

mohadese_b84@yahoo.com

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