OPTIMIZATION OF CULTURE CONDITIONS FOR BONE MARROW STROMAL CELLS IN RPMI-1640 MEDIUM

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OPTIMIZATION OF CULTURE CONDITIONS FOR BONE MARROW STROMAL CELLS IN RPMI-1640 MEDIUM (Abstract): Bone marrow mesenchymal stem cells are important for both research and clinical purpose. A number of culture methods for these cells are available on the market, many of them consisting of specialized growing media in combination with growth factors. Our goal was to optimize a less expensive culture method for bone marrow mesenchymal cells. **Material and methods:** Eight samples of bone marrow aspirates from patients were used. Out these 8 samples 2 were from healthy people, 3 from chronic granulocytic leukemia patients, 2 from multiple myeloma patients and 2 from patients with myelodysplastic syndrome. Bone aspirates from healthy people were used to optimize the culture method and the rest were used for testing the optimized method. Two methods were tried: 1. Cell culture starting from whole bone marrow, 2) cell culture after bone marrow separation in density gradient with Histopaque. **Results:** Cell culture starting from whole bone marrow gives better yields for mesenchymal stem cells than methods which include gradient density separation of mononuclear cells with Ficoll-Histopaque. **Conclusions:** We have optimised a less expensive cell culture method for bone marrow mesenchymal cells. **Key words:** BONE MARROW STROMAL CELLS, CELL CULTURE, OPTIMIZATION METHOD.

Stem cells zygotic, embryonic or adult have the ability of self-renewal and differentiation into at least one mature specialized cell (1). The ability of adult stem cells to differentiate into other cells is in relation with their origin (1). Bone marrow contains a heterogeneous population of cells which includes adipocytes, reticular cells, macrophages, vascular endothelial cells, smooth muscular cells and stroma cells (2). Within bone marrow we find adult stem cells with restrictive genetic programs like hematopoietic stem cells which differentiate into leukocytes, erythrocytes, or megakaryocytes and mesenchymal stem cells (MSCs) or of bone marrow stromal cells (BMSCs) that can differentiate to form bone, cartilage, or adipose tissue (3, 4). The presence of stem cells is not limited to bone marrow, these cells have been observed in liver, periosteum, blood and support tissues in muscles (5).