International Journal of PharmTech Research
CODEN (USA): IJPRIF, ISSN: 0974-4304, ISSN(Online): 2455-9563
Vol.9, No.11, pp 78-83, 2016

Comparison Of Biological Characteristic And Osteogenic Differentiation Between Bone Marrow And Adipose Mesenchymal Stem Cell In Various Age Group

William Chandra*, Ismail Hadisoebroto Dilogo

Department of Orthopaedic &Traumatology, Cipto Mangunkusumo Hospital, Faculty of Medicine Universitas Indonesia, Jakarta, Indonesia.

Abstract:Introduction. Mesenchymal stem cell is the answer of complicated medicine problems, including orthopaedic. Bone marrow is still the main source. Because of limited source, invasive procedure, pain, and relative less cell, adipose will be a promising source with equal regenerating and differentiating ability. Along with increasing life expectancy, geriatric population is increasing as well as the potential need for stem cell application. Yet there is still controversy about stem cell quality in aging.

Methods. This study was conducted in Stem Cell Medical Technology Integrated Service Unit Cipto Mangunkusumo Hospital, Faculty of Medicine Universitas Indonesia, Jakarta, October 2015 - March 2016. 12 patients were divided into 3 age group; 15-30 year, 31-40 year, and 41-55 year. Bone marrow from posterior iliac crest and adipose tissue were collected, mesenchymal stem cell isolation and culture were done subsequently. Biological characterization, Population Doubling Time, osteogenic differentiation, and alizarin red assaywere carried out. All data was analyzed using SPSS 20.

Results. No significant difference was observed in biological characteristic and osteogenic differentiation of bone marrow and adipose mesenchymal stem cell among age group ($p>0.05$). There is significant difference in Population Doubling time in31-40 year group($p=0.000$) and 41-55 year group($p=0.000$).

Conclusions. Adipose mesenchymal stem cell had steady biological characteristic, Population Doubling Time, and osteogenic differentiation. Bone marrow mesenchymal stem cell had increasing population doubling time in increasing age, apart from biological characteristic and osteogenic differentiation. Adipose could be the source of choice in harvesting mesenchymal stem cell at any age.

Keywords: Mesenchymal Stem Cell,Osteogenic Differentiation, Bone Marrow, Adipose, Age.

*****