IN VITRO DIFFERENTIATION POTENTIAL OF DECIDUOUS DENTAL PULP CELL

ABSTRACT

Background. Recent approaches to restore the function of tissues and organs are being developed through a method called regenerative dentistry medicine. In the teeth and oral cavity there are many sources of stem cells, one of them is a Stem Cell in Human Exfoliated Deciduous Teeth (SHED). SHED has advantages over other stem cell sources because SHED derived from easily obtainable tissue and able to differentiate into various types of cells, one of them is osteoblast. In the regenerative dentistry medicine, osteoblasts is indispensable for bone regeneration. Aim. To find out the potential of deciduous dental pulp cell differentiation, to find out when deciduous dental pulp cells begin to differentiate, to find out when deciduous dental pulp cells can differentiate optimally. Methods. Pulp cells were isolated and cultured with DMEM medium, Fetal Bovine Serum, L-glutamine, penicillin, and Streptomycin. After the pulp cell culture reached 80% confluent, the mixture was added dexamethasone, β-gliserolfosfat and akorbat acid for differentiation into osteoblasts and then stored in an incubator for 28 days. Cells were washed with Phosphate Buffered Saline and given 1% alizarin red staining for 30 minutes. Areas that absorb staining was observed with the light microscope. Result. Deciduous dental pulp cells showed positive results on Alizarin Red staining. The formation of calcium deposits in the pulp cells differentiated osteogenic red through a light microscope. Red pulp cells that formed because the dyes are given by calcium in the bone matrix. Conclusion. Deciduous dental pulp cell is potential into osteoblasts differentiation that can be used as a source of regenerative medicine.

Keywords: Deciduous dental pulp cells, differentiation, osteogenic.