

EXPRESSION OF GROWTH FACTORS UPON EXPOSURE OF DENTAL PULP STEM CELLS TO ELUDED DYCAL® SOLUTION

The purpose of this in vitro study is to determine the expression of growth factors upon exposure of dental pulp stem cells (DPSC) to eluded Dycal® solution. In this book, samples were collected from sound, permanent teeth (age between 18-40 years old), with informed consent from patients who came for dental extraction under general anesthesia or local anesthesia at the Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, University of Malaya. The isolation, culturing methods, growth kinetics, flowcytometry analysis and multilineage differentiation were carried out as described by Govindasamy et al., (2010). Cultured DPSC was then exposed to multiple concentration of Dycal®. The test samples were immersed and incubated in culture medium for 2, 5 and 8 days at 370C. The cytotoxic cell count was then recorded by Trypan Blue Dye exclusion. Then, total RNA was extracted and loaded into each well of The Human Growth Factors RT2 Profile™ PCR arrays (www.SABiosciences.com) profiles that contain of 96 genes related to growth factors. RT2 Profiler PCR array was then performed on ABI Prism 7900HT (Applied Biosystems), and Sequence Detection System (SDS) v1.4 software was used to analyze the results. Samples with a cycle threshold of 35 or less were included for calculations of the fold change in gene expression. As a result, a total of 38% genes were up-regulated in treated DPSC whereas, a total of 61% genes were down-regulated. Based on the up-regulated genes, it was found that 12 significant functions and 14 canonical pathways in treated DPSC might play a significant role in repair. The functional pathways of expressed genes that were up-regulated in treated DPSC were tissue development including cell growth and proliferation, cell to cell signaling and interaction and DNA replication, recombinant and repair in organism development.

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