SHORT COMMUNICATION

CROSSTALK BETWEEN FIBROBLASTS AND ENDOTHELIAL CELLS PROMOTES ANGIOGENESIS IN VITRO: PUTATIVE ROLE OF ALKALINE PHOSPHATASE, GROWTH FACTORS AND COLLAGEN

Guerreiro SG[1,2,3], Unger RE[4], Sartoris A[4], Martins MJ[3], Barbosa MA[1,2,5], Soares R[3], Granja PL[1,2*], Kirkpatrick CJ[4]

[1]INEB - Instituto de Engenharia Biomédica, Biomaterials Division, Universidade do Porto, Rua do Campo Alegre, 823, 4150 Porto, Portugal. E-mail: guerreiro.su@gmail.com [2]Universidade do Porto, Faculdade de Engenharia, Porto, Portugal. [3]Universidade do Porto, Faculdade de Medicina, Departamento de Bioquímica (U38-FCT), Porto, Portugal. [4]REPAIR-Lab, Institute of Pathology, University Medical Center, Johannes Gutenberg University, Mainz, Germany. [5]Universidade do Porto, Instituto de Ciências Biomédicas Abel Salazar, Porto, Portugal.

Interactions between the different cell-types, growth factors and extracellular matrix components involved in angiogenesis are crucial in the mechanisms of new vessel formation for tissue regeneration. The aim of the present study was to investigate if cocultured fibroblasts and endothelial cells (from macro- or microvasculature) could modulate growth factor production (VEGF, bFGF, TGF-b1 and IL-8), influence the formation of microcapillary-like structures by endothelial cells and affect fibroblast differentiation. Results obtained show that the two cells types interact with each other through exchange of growth factors (e.g., fibroblasts produce VEGF, which is known to influence angiogenesis). Fibroblasts promoted the formation and organization of capillary-like structures by endothelial cells, increased the amount of collagen in the cocultures and determined the expression of alkaline phosphatase. High alkaline phosphatase expression could be co-localized with capillary-like structures and the interaction between the two cells types induced fibroblast activation near microvessel-like structures.calcification.