ABSTRACT

THE ROLE OF ENDOTHELIAL PROGENITOR CELLS (EPCs) IN POLARIZATION CHANGE OF MACROPHAGE PHENOTYPE M1 AND M2 IN DIABETES MELLITUS MICE MODEL

IN VITRO LABORATORY EXPERIMENTAL RESEARCH

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Background: Diabetes Mellitus (DM) is a disease that threatens global public health with their chronic complication, such as Diabetic Foot Ulcer (DFU). There are more macrophage phenotype M1 than M2 on DFU, that contribute to pro-inflammatory cytokines secretion, and there is an alteration of EPCs in DM that should have the ability of angiogenesis and neovascularization, so the wound healing process in DM patient is slower than non-DM patient.

Objective: To prove in vitro role of Bone marrow (BM) derived EPCs in polarization change of macrophage phenotype M1 and M2 in DM mice model

Methods: Peritoneal macrophages were co-cultured with EPCs and examined the M1 and M2 markers by FACScalibur and qRT-PCR. The result would be compared with the examination co-culture without EPCs.

Result: By FACScalibur examination, the results after co-culture with EPCs was the M1 surface marker in control group were significantly decreased, namely CD11c (p<0,0001), while M2 surface marker proved significantly increased, that were CD206 (p=0,0001) and MGL1 (p<0,0001). The same results happened in DM mice model group, that were CD11c (p<0,0001), CD206 (p=0,0445) and MGL1 (p=0,0220). By qRT-PCR examination, the results after co-culture with EPCs were the M1 genetic expression in DM mice model were significantly decreased, namely CD11c (p<0,0001), TNF alpha (p=0,0002), IRF5 (p<0,0001), while the M2 genetic expression proved significantly increased that were CD206 (p<0,0001), MGL1 (p=0,0002), Ym1 (p=0,0057), Arg1 (p=0,0234) and IL10 (p=0,0020).

Conclusion: EPCs were able to affect macrophage polarization with tendency towards to macrophage phenotype M2

Keywords: Diabetes Mellitus, Macrophage, EPCs, Polarization