[gw22-e0792] **THE STUDY ON HUMAN UMBILICAL VEIN ENDOTHELIAL CELLS (HUVECS) PROLIFERATION AND THE BEST ENERGY IN SHOCK WAVES TREATMENT**

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Purpose To explore how different intensity of ultrasonic shock energy influences the human umbilical vein endothelial cells (HUVECs) proliferation, differentiation and the related cytokines, and to ascertain the best energy of CSWT.

Methods The HUVECs cell lines were performed using different levels of energy (0, 0.03, 0.09, 0.18, 0.24 mJ/mm^2) shock wave treatment in vitro, Utilising CCK8 colorimetric method to detect HUVECs proliferation, real time PCR, Western blotting and Flow Cytometry were utilised to detect the changes in mRNA and protein of VEGF, IL-8, ICAM-1 before and after CSWT treatment.

Results The 0.09 mJ/mm^2 shock energy significantly promoted the HUVECs proliferation ($p<0.05$). The results from real time PCR revealed that 0.09 mJ/mm^2 treatment markedly increased the expression of VEGF, IL-8, ICAM-1 ($p<0.001$, respectively) compared with the non-treated control, the expression of ICAM-1 0.03 mJ/mm^2 group were increased compared with the control group ($p<0.01$) While the expression of VEGF, IL-8 showed no significant changes ($p>0.05$, respectively), 0.18 mJ/mm^2 treatment markedly increased the expression of VEGF ($p<0.001$) compared with the non-treated control While the expression of ICAM-1, IL-8 showed no significant changes ($p>0.05$, respectively), 0.24 mJ/mm^2 treatment showed no significant increase in the expression of VEGF, IL-8, ICAM-1($p>0.05$, respectively) compared with the non-treated control. Western blot analysis and Flow Cytometry showed that the expression of VEGF, IL-8, ICAM-1 in 0.09 mJ/mm^2 group were significantly higher than the control group ($p<0.05$, respectively); the expression of VEGF in 0.03 mJ/mm^2 group was significantly higher than the control group ($p<0.05$) While the expression of ICAM-1, IL-8 was not significantly higher than the control group $p>0.05$, respectively); the expression of VEGF in 0.18, 0.24 mJ/mm^2 group was significantly higher than the control group ($p<0.05$) While the expression of ICAM-1, IL-8 was not significantly higher than the control group ($p>0.05$, respectively).

Conclusions (1) The different extracorporeal shock wave energy promoted the HUVECs proliferations to different extent, the effect of 0.09 mJ/mm^2 energy is the most evident. (2) The 0.09 mJ/mm^2 energy increase the expression of IL-8, ICAM-1 mRNA and protein most significantly. (3) The 0.09 mJ/mm^2 energy increased the expression of VEGF mRNA and protein most remarkably. (4) The 0.03~0.24 mJ/mm^2 energies also have some effects in facilitating the secretion of VEGF, IL-8 and ICAM-1.