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عنوان مقاله:

Extremely low frequency-pulsed electromagnetic fields affect proangiogenic-related gene expression in retinal pigment epithelial cells

محل انتشار:

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خلاصه مقاله:

Objective(s): It is known that extremely low frequency-pulsed electromagnetic fields (ELF-PEMF) influence multiple cellular and molecular processes. Retinal pigment epithelial (RPE) cells have a significant part in the emergence and pathophysiology of several ocular disorders, such as neovascularization. This study assessed the impact of ELF-PEMF on the proangiogenic features of RPE cells. Materials and Methods: Primary cultured RPE cells were treated with ELF-PEMF (50 Hz) for three days. Using ELISA assay, we evaluated the effects of treatment on RPE cell proliferation and apoptosis. Also, RT-PCR was used to determine the gene expression of proangiogenic factors, such as matrix metalloproteinase-2 (MMP-2), MMP-9, vascular endothelial growth factors receptor 2 (VEGFR-2), hypoxia-inducible factor 1 (HIF-1α), VEGFA, cathepsin D, connective tissue growth factor (CTGF), E2F3, tissue inhibitors of metalloproteinases 1 (TIMP-1), and TIMP-2.Results: No noticeable changes were observed in cell proliferation and cell death of ELF-PEMF-exposed RPE cells, while transcript levels of proangiogenic genes (HIF-1α, VEGFA, VEGFR-2, CTGF, cathepsin D, TIMP-1, E2F3, MMP-2, and MMP-9) increased significantly.Conclusion: RPE cells are important for homeostasis of the retina. ELF-PEMF increased the gene expression of proangiogenic factors in RPE .cells, which highlights concerns about the impact of this treatment on human health

کلمات کلیدی:

ELF-PEMF, Gene expression, Proangiogenic factors, Quantitative real-time PCR, RPE cells

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