Abstract

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[Microwave radiation induces injury to GC-2spd cells].

[Article in Chinese]

Xue L, Wang SM, Chen HY, Peng RY, Zuo HY, Wang LF, Zhao L, Wang SX.

Abstract

OBJECTIVE: To explore the impact of microwave radiation on GC-2spd cells.

METHODS: We exposed cultured GC-2spd cells to microwave radiation at the average power densities of 0, 10 and 30 mW/cm2 for 15 minutes and, from I to 24 hours after the exposure, we observed the changes in cell proliferation, histology and ultrastructure, cell apoptosis, and cAMP content by MTIT, light microscopy, electron microscopy, flow cytometry and ELISA.

RESULTS: Compared with the control group, the GC-2spd cells showed a significant decrease in proliferation ability at 1 -24 hours after 10 and 30 mW/cm2 microwave radiation, except at 12 hours after 30 mW/cm2 radiation (P <0.05 or P <0.01), with reduced length and number of cell enation and increased intra cytoplasm vacuoles. The rate of cell apoptosis (%) was significantly increased in the 10 and 30 mW/cm2 groups at 6 hours (4.56 +/- 2.09 vs 14.59 +/- 1.09 and 8.48 +/- 1.73, P <0.05 or P <0.01) , with agglutination and margin translocation of chromatins and obvious dilation of endo cytoplasmic reticula. The cAMP content (nmol/g) in the GC-2spd cells was remarkably reduced in the 10 and 30 mW/cm2 groups at 6 and 24 hours (2.77 +/-0.24 vs 1.65+/- 0. 17 and 1.96+/-0.10, 3.02 +/-0.47 vs 2.13 +/-0.33 and 1.69 +/-0.27, P <0.05 or P <0.01).

CONCLUSION: Microwave radiation at 10 and 30 mW/cm2 may cause injury to GC-2spd cells, which is manifested by decreased content of intracellular cAMP, reduced activity of cell proliferation, and increased rate of cell apoptosis.

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