COMBINED EFFECT OF ELECTROMAGNETIC RADIATION, DNA-INTERCALATORS, C60-FULLERENE AND CAFFEINE ON HUMAN BUCCAL EPITHELIUM CELLS

G. B. Skamrova 1, Yu. I. Prylutskyy 2, M. P. Evstigneev 1,3

1 Sevastopol National Technical University, Ukraine
2 Taras Shevchenko National University of Kyiv, Ukraine
3 Belgorod State University, Russia
Now the number of physical and chemical biologically active damage factors dramatically increased. The ways to neutralize such effects have not been studied enough. In this work the techniques of visual assessment of chromatin granulation and of electronegativity of human buccal epithelium cell nuclei were used in order to study the combined effects of the exposure to low-intensity electromagnetic radiation of the millimeter range electromagnetic radiation and to the DNA-binding compounds, such as: antibiotic doxorubicin, mutagens ethidium bromide and proflavine, as well as to caffeine and C$_{60}$-fullerene which are not directly interact with DNA. When the action of electromagnetic radiation and DNA-binding compounds is combined, a synergistic effect of reducing the cell response was observed in contrast to the effects caused by electromagnetic radiation and drugs separately. When cells were irradiated in the presence of C$_{60}$-fullerene or caffeine, a protective effect of compounds against electromagnetic radiation influence was observed. The obtained results may provide perspectives in the use of the C$_{60}$ fullerene and caffeine as DNA-protectors under the action of electromagnetic radiation.

**Key words**: DNA-intercalators, C$_{60}$-fullerene, electromagnetic radiation, human buccal epithelium.

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