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PAPER TITLE CHARACTERIZATION OF HUMAN NORMAL AND TUMOR CELLS IRRADIATED WITH REPEATED LOW DOSES OF GAMMA RAYS

AUTHOR(S) NAME(S) MAJA OSMAK, SAVETA MILJANIĆ, SANJA KAPITANOVIĆ

SUBMITTING AUTHOR

LAST NAME OSMAK FIRST NAME MAJA TITLE Ph. D.

AFFILIATION RUĐER BOŠKOVIĆ INSTITUTE TEL ++ 385-1-4561-145

STREET BIJENIČKA CESTA 54 FAX ++385-1-425-497

CODE 10000 CITY ZAGREB COUNTRY CROATIA

PRESENTING AUTHOR (IF DIFFERENT)

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ABSTRACT (See instructions overleaf)

Lately, a new type of the consequence caused by radiation have received much attention. It was found that tumor cells exposed to fractionated ionizing irradiation, with a high total dose, may become resistant to chemotherapeutic agents. The aim of the present study was to determine whether the same phenomenon will occur in human normal and tumor cells after exposure to a low total dose of irradiation divided in a small number of fractions. Since c-*myc*, c-Ha-*ras* and *p53* oncogenes are involved in both drug-resistance and neoplastic transformation, we also examined their expression in normal preirradiated cells.

Primary human lung fibroblasts or human cervical carcinoma HeLa cells were irradiated five days with daily dose of 0.17 Gy of gamma rays. The sensitivity of preirradiared cells (after 5 or 10 γ-ray-fractions) to different cytostatics was determined by colorimetric MTT dye assay and compared to the sensitivity of control cells. The expression of c-*myc*, c-Ki-*ras* and *p53* oncogenes in control and preirradiated cells was detected immunocytochemically. The results show that preirradiated cells became resistant to vincristine and vinblastine, but did not change their senisitivity to doxorubicin, 5-fluorouracil, mitomycin C or cisplatin. The expression of examined oncogenes was the same in normal preirradiated and control cells.

Our results suggest that irradiation of human cells with multiple small doses of gamma rays may change their susceptibility to chemical agents. These data may have practical application to radiation protection determination.