

3 - 85 Quantitative Analysis of Mitochondrial DNA Mutations Caused by Heavy-ion Radiation

He Yang, Zhou Xin and Zhang Hong

There are two types of mitochondrial DNA mutations; mitochondrial DNA large fragment missing and mitochondrial DNA point mutation (SNPs)^[1]. To investigate the mitochondrial DNA mutations caused by heavy-ion radiation, human breast cancer cell line MCF-7 was irradiated by X-ray or heavy-ion, mtDNA 4977 bp deletion was quantificated by real-time PCR and D310 point mutations were quantificated by clone sequencing. The results shows that heavy-ion irradiation induced mtDNA 4977 bp deletion, the mtDNA 4977 bp deletion was not dose-dependent after 2~8 Gy irradiation and could be temporarily detected in irradiated MCF-7 cells after 6 Gy irradiation. Clonogenetic assay shows that the cellular inactivation effect of heavy-ion irradiation was greater than X-ray, there are more D310 mutations in heavy-ion irradiated cells than that in X-ray irradiated cells (Table. 1), and the mutations accumulated stably in survived cells.

Table 1 D310 polymorphism distribution in survival clones of MCF-7 cell after two treatment

D310 C-track	Unirradiated	X-ray	Carbon ions
C6	8%	16%	24%
C6/C7	4%	0	0
C7	74%	70%	58%
C8	12%	14%	18%
C7/C8	2%	0	0

Reference

[1] P. Parrella, D. Seripa, M. G. Matera, et al. ,Cancer letters, 190, 1(2003)73.

3 - 86 Radiation Biology Effect of Rosmarinic Acid on Normal and Tumor Cells

Liu Yuanyuan, Zhang Hong and Liu Yang

Rosmarinic acid (RA) is a water-soluble polyphenolic component isolated from many medicinal plants. It has been reported to have anti-oxidative, anti-inflammatory and protective activity on lipopolysaccharide induced liver injury^[1-2]. The study is to compare the radiation biology effect of RA on normal with that of tumor cells. Those cells were treated with X-ray in dose of 2 Gy. Our preliminary result has shown that the irradiation of X-ray in dose of 2 Gy can inhibit both normal and tumor cells growth. RA can promote

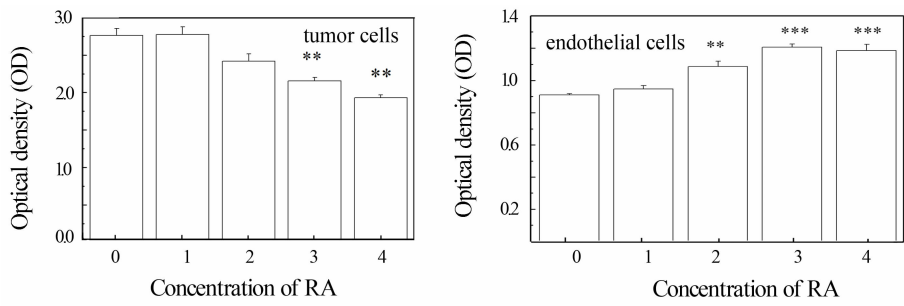


Fig. 1 The effect of rosmarinic acid on normal and tumor cells growth in dose of 2 Gy. The WST-1 was performed to test the effect of RA on different cells proliferation for 24 h after pretreatment by X-ray. The cells were irradiated by X-ray in dose of 2 Gy. RA was added into 96-well plates in concentration of 9, 18, 36, 72 μ g/ml.