

## **Radioprotective effect of aloe polysaccharides on three non-tumor cell lines**

Wang ZW, Huang ZS, Yang AP, Li CY, Huang H, Lin X, Liu ZC, Zhu XF. (2005 April). School of Pharmacy, Guangzhou University of Traditional Chinese Medicine, Guangzhou, Guangdong, 510405, P. R. China, 24(4):438-42).

**BACKGROUND & OBJECTIVE:** Our previous study showed that aloe polysaccharides (AP) could evidently decrease the mortality of irradiated mice mainly through increasing the amount of hemocytes and ameliorating immune function of mice. Whether AP can protect the cells in vitro from irradiation damage is unknown. This study was to explore radioprotective effect of AP on 3 non-tumor cell lines, and its effect on cell cycle.

**METHODS:** MTT assay was used to detect cytotoxicities of AP to normal human liver cell line Chang Liver ©. Liver), normal human embryo kidney cell line 293, and normal human umbilicus vein endothelial cell line ECV304. The 3 cell lines were treated with AP before or after irradiation. After 7-10 days normal culture, survival rate of cells was calculated by clone formation assay. Cell cycle was analyzed by flow cytometry (FCM) at different time points after irradiation. **RESULTS:** 293 cells were treated with AP at different time points before and after x-ray irradiation. Survival rate of 293 cells treated with AP 30 min before x-ray irradiation was the highest (64.2%) among all groups. Evident dosage-effect relationship of AP appeared in concentration range of 12.5-50 microg/ml. After treatment of 50 microg/ml of AP, survival rates of 293, ECV304, and C. Liver cells increased from 41.5%, 46.5%, and 40.9% to 49.4%, 72.1%, and 89.1%, respectively. Irradiation caused a distinct G(2)/M block and decreased G(0)/G(1) phase population in 293 and C. Liver cells. In C. Liver cells, pretreatment of 50 mug/ml of AP increased G(0)/G(1) phase population from 31.8% to 43.8%, decreased G(2)/M phase population from 38.5% to 13.8% 6 h after irradiation; and decreased G(2)/M phase population from 22.9% to 8.7% 24 h after irradiation. In 293 cells, the same pretreatment increased G(0)/G(1) phase population from 30.1% to 45.9% 6 h after irradiation, and from 40.4% to 45.2% 24 h after irradiation accompanied by decrease of G(2)/M population from 59.6% to 54.1%.

**CONCLUSIONS:** AP has radioprotective effect on non-tumor cells. This effect might relate to alleviating of cell cycle turbulence.

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