[795] **RADIOSENSITIZATION OF HUMAN PROSTATE CELL LINE LNCAP BY [6]-GINGEROL**

JOSIAS PAULINO LEAL SILVA*; MARIA HELENA BELLINI
INSTITUTO DE PESQUISAS ENERGÉTICAS E NUCLEARES, SAO PAULO, SP

Introduction: Prostate cancer is the second most prevalent malignancy and second leading cause of cancer-related deaths among men in the world. Several different diagnostic and therapeutic approaches have been developed in order to decrease the death rates. A number of experimental and clinical studies have showed antiproliferative, pro-apoptotic, anti-metastatic and anti-angiogenic effects of several phytochemicals. [6]-Gingerol (1-[4'-hydroxy-3'-methoxyphenyl]-5-hydroxy-3-decanone), the major pungent principle of ginger, has anti-oxidant, anti-inflammation and anti-tumor promoting activities.

Aim: The purpose of this study was to evaluate the radiosensitizing activity of [6]-Gingerol in the human prostate cancer cells.

Methods: The viability was assessed (3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide) tetrazolium (MTS) assay. The prostate human cells (LNCAP) (2,5×103 cells/well) were seeded into 96-well plates, after 24 hr they were treated with 150 and 300μg/mL of [6]-Gingerol or vehicle alone (0.1% DMSO) in serum containing media. After incubation, MTS solution was added to the plate at a final concentration of 0.5 mg/mL. The cells were incubated for 2 hr in dark at 37. The resulting MTS-products were determined by measuring the absorbance at 490 nm with ELISA reader. In the clonogenic cell survival assay, the cells were divided into two groups: A) control, B) treated with [6]-Gingerol, C) irradiated control and D) treated with [6]-Gingerol and irradiated. The cells were irradiated by 60Co source in the range from 0 to 15 Gy, using the GammaCell 220 – Irradiation Unit of Canadian-Atomic Energy Commision Ltd. (CTR-IPEN). After 10-14 days of culture in normoxia conditions, cell colonies were fixed and stained with methanol 20% and crystal violet 0.5% and counted. Multiple comparisons were assessed by One-way ANOVA followed by Bonferroni´s tests with GraphPad Prism version 6.0 software. $p < 0.05$ was considered statistically significant.

Results: Our results demonstrated that [6]-Gingerol treatment induced a dose-dependent decrease in the cell viability. Compared with the vehicle control, the cell viabilities were 75.99 ± 3.56% and 43.06 ± 7.82% when the cells were exposed to 150 μg/mL and 300 μg/mL of [6]-Gingerol, respectively. Therefore, we observed a significant difference between the treatment groups; ($P<0.01$). Then, the effect of [6]-Gingerol (300 μg/mL) on cell radiosensitivity was evaluated. The clonogenic cell survival assay showed a significant difference between dose-survival curves of group (A) and (B), ($P<0.05$) and between the group (C) and (D), ($P<0.05$). Therefore, [6]-Gingerol treatment increased the radiosensitivity of LNCaP cells.

Conclusions: The results demonstrated that, besides inducing a dose-dependent apoptosis in LNCaP human prostate cancer cells, [6]-Gingerol showed a radiosensitizing activity. These findings suggests it potential as candidate phytochemical agent for combined therapy for prostate cancer.

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Palavras-chave: Ionizing radiation; [6]-gingerol; radiosensitization