



Liposomes, the Trojan horse of cis-Platinum in F98 cells for PAT applications



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Introduction

A fundamental objective in radiotherapy is the death induction of tumour cells, preserving the surrounding tissues. In PAT the objective is achieved enhancing the deposition of the target metal inside the tumour cells. This work is a new approach to elucidate the relative weight of the different parameters that are involved in the cancer cells death, with a combined therapy using cis-Platinum (Cis-Pt) , liposomes and X-ray irradiation.



Methodology

Synchrotron X-ray radiation of 4 Gy was applied on cultures of F98 rat glioma cells. The monochromatic energy used was above and below the absorption K-edge of Pt (78.395 KeV) Cis-Pt. was used as a target and delivered using different release systems: saline solution (CisPt), liposomes in a saline solution (LiCisPt) and liposomes in minimal medium as adjuvant (LiCisPtM). MTT FORMAZAN reaction test was used to evaluate the cells metabolic activity.

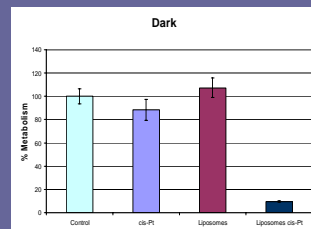
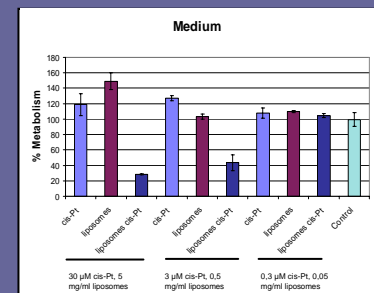
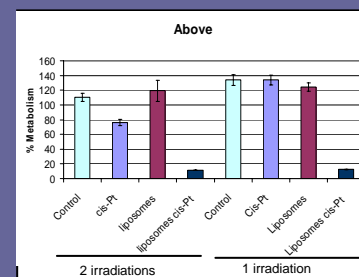
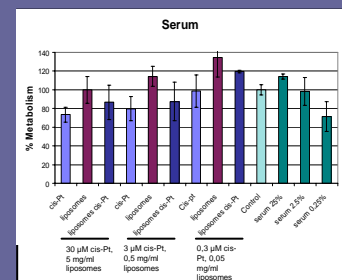
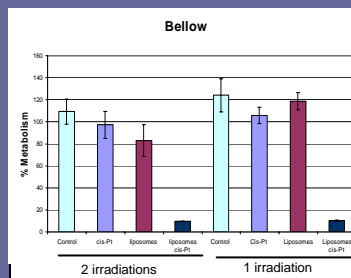
Conclusions

- The present results could be helpful to plan new therapeutic protocols of PAT associated to cis-Pt.
- Understanding the delivery mechanisms of this liposomes will allow to prepare other vehicles and metals more efficient in radiotherapy for resistant tumour cells.

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Results



Irradiated and non irradiated cells treated with (LipCisPtM), lost about 80% of the metabolic activity.

- PAT is more effective with double exposition with energies above K--edge.
- Cell cultures irradiated one time, always recovered more than 100% of the mitochondrial activity.