

ESVONC Annual Congress

Abstract Submission Form

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Submission deadline 31st January 2009 by email to mb673@cam.ac.uk

preferred publication: oral presentation

Abstract Title: Oncothermia basic research I. - Results of the in vitro experiments

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Objective: Oncothermia, (OT) is a complementary method in cancer treatment for several years. Our objective is experimentally studying the gene expression alterations of two heat-shock proteins (HSP70A1A, HSP90AA1) and 3 hypoxia-induced genes (HIF1- α , CA9 and VEGF) in *in vitro* and *in vivo* compare OT and conventional hyperthermia (HT).

Material and Methods: OT utilizes modulated 13.56 MHz RF-current conduction in capacitive coupled arrangement. Under normal conditions, heat shock proteins (HSPs) play an important role in protein folding, translocation of proteins across membranes, quality control in the ER and proteolytic turnover of many of key regulators of cell growth and survival. They contribute to drug- and radio-resistance and in case of advanced cancers reflect a cytoprotective stress response to the hypoxic, acidic and nutrient-deprived environment. These proteins at molecular level help cancer cells to avoid apoptotic death. In order to reveal the effect of the treatments, we focused on two members of this protein family: HSP70 and HSP90. We used real-time PCR to examine gene expression changes caused by OT and HT. In order to investigate hypoxia, we examined three hypoxia-inducible gene expressions: HIF1- α transcription factor, carbonic anhydrase CA9 and vascular endothelial growth factor (VEGF).

Results: Both HSPs showed increased gene expression, but a more significant difference (7-12 fold) was observed in case of HSP90, especially after OT at 42 °C; the two other treatments result similar gene expression.

Conclusion: Treatments take distinct effects on sample's gene expression. We will examine other hypoxia-inducible genes to characterize the changing at molecular level.

General Member

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