

POSTER PRESENTATION

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Metabolic responses of A549 lung cells to cisplatin and radiation exposure studied by ^1H NMR spectroscopy

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From 16th International Charles Heidelberger Symposium on Cancer Research
Coimbra, Portugal. 26–28 September 2010

This work aims to characterize the dynamic metabolic responses of A549 lung tumor cells exposed to cisplatin (CDDP) and to 6 Gy ionizing radiation over a period of 48h. Control and CDDP/radiation treated cells, in the form of lysed suspensions, were directly analyzed by ^1H High Resolution Magic Angle Spinning (HRMAS) NMR spectroscopy (500 MHz) and the changes in their intracellular metabolic profiles assessed by spectral integration and multivariate analysis. In this way, consistent variation patterns could be detected and specific metabolic effects related to drug and/or radiation exposure could be identified. In particular, significant time-dependent alterations were found in lipids and choline-containing compounds, as well as in low molecular weight metabolites such as some amino acids and nitrogenated bases. The results presented show that ^1H NMR spectroscopy is a powerful tool for providing detailed biochemical information about the effects induced on cultured cells by external perturbations, such as a chemotherapy drug and ionizing radiation. In the future, this approach will be applied to lung cancer primary cultures subjected to different treatment regimens.

doi:

Cite this article as: Ladeirinha et al.: Metabolic responses of A549 lung cells to cisplatin and radiation exposure studied by ^1H NMR spectroscopy. *BMC Proceedings* 2010 **4**(Suppl 2):P42.

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Published: 24 September 2010

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