

P004 Magnetic resonance evaluation of spermine as a biomarker of androgen sensitivity in prostate cancer.

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The aim of this study is to evaluate magnetic resonance spectroscopy (MRS) as a method to monitor spermine concentrations in prostate cell lines, tissue samples and (ultimately) in patients *in vivo*. To evaluate whether spermine may be detected in cell lines and tissue samples using ^1H MRS; and to validate using 2D MRS techniques. To calculate the lower concentration limit for detection. To evaluate the effect of environment on MR properties of spermine (visibility and chemical shift). To compare spermine levels in different cell lines grown under different conditions. To compare spermine levels in normal prostate tissue and in cancer. Long term goal: to evaluate spermine as a biomarker of hormone sensitivity in prostate cancer.

Results: The ^1H NMR resonance of spermine is pH dependent and at pH 7.2, the spermine multiplet appears centred on 3.1ppm. PC-3 and LNCaP cell lines reveal no/undetectable levels of spermine using MRS. However, primary cell culture of normal prostate tissue may reveal the presence of spermine. MAS NMR of normal prostate tissue display high amounts of spermine. Hormone sensitive prostate cancer patients who have not undergone hormone therapy have low spermine levels in the same region.

Conclusions: ^1H MRS can be used to assess spermine in prostate cancer. Preliminary results show large differences in spermine concentration between normal prostate tissue and prostate cancer.