Abstract Preview of 'Hyperpolarized C13 succinate' (LPZS3Z)

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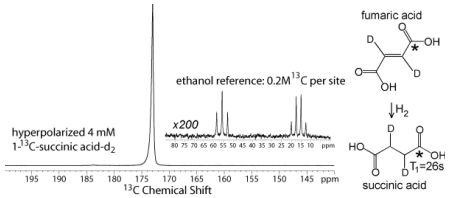
Preferred Division	Biological and Medicinal Chemistry
Preferred Symposium	Latest Trends in Medicinal Chemistry, Drug Discovery and Design (Joint with OR)
Invited Speaker	No
Preferred Presentation	Oral
General Program Student Award	No
Audio/Visual	[ ] 35mm Slide Projector [ ] Audio Capability [ ] Chalk or White Board
Audio/Visual (Other)	

Preview of your abstract

Hyperpolarized ^{13}C succinate for biomedical MR imaging and spectroscopy **E.Y. Chekmenev**[*a,b] <*eduard@caltech.edu*>, **P. Bhattacharya**[a,b], **V.A. Norton**, **J. Hovener**[a,b] and **B.D. Ross**[$a,b], [a]A. A. Noyes Laboratory of Chemical Physics, California Institute of Technology, Pasadena, CA 91125; **D.P. Weitekamp**, [b]MR Unit, Huntington Medical Research Institutes, Pasadena, CA 91105.

We use PASADENA (parahydrogen and synthesis allow dramatically enhanced nuclear alignment) method for ^{13}C polarization enhancement in 1-^{13}C-succinic acid-d_2 by more than 10,000 fold compared to spin polarization induced by magnetic field in typically used high resolution NMR spectrometers and MRI scanners. 1-^{13}C-fumaric acid-d_2 is utilized as unsaturated precursor for the molecular addition of para-H_2. This pathway is essentially non-toxic and results in long living hyperpolarized 1-^{13}C-succinic acid with ^{13}C T_1 relaxation time of 26s. Additionally we demonstrate a biomedical utility of 1-^{13}C-succinic acid, an intermediate in TCA cycle, gluconeogenesis, cancer metabolism, neurotransmission. Specifically, when succinic acid is injected in rat artery, it crosses blood brain barrier into the tumor where it is metabolized to glutamate and glutamine, which act as metabolic biomarkers for differential metabolism and transport of tumor and normal brain tissues.



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