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OXYGEN IMAGING IN TISSUES

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Oxygen imaging in tissues.

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Biophys J. 1992; 61(2 Pt 2): A177, 1015.

Abstract

The dependence of higher animals on cellular metabolism is well accepted. It has been shown that concentrations of oxygen up to 5 μm are linearly related to metabolism. In the hope of a better understanding of cellular metabolism, we are attempting more accurate measurements of oxygen concentrations in tissue. A phosphorescent probe: Palladium Coproporphyrin (PDCO) has previously been shown to be a promising probe for the measurement of oxygen because of its Stern Volmer relationship with oxygen (*J. of Biological Chemistry*, 1987, pp. 5476). Frequency domain phosphorescence lifetime imaging is particularly suited to take advantage of the properties of this probe to quantitate concentrations of oxygen in the range of metabolic interest. We have performed experiments using rat livers that were perfused with a solution of PDCO. Phase resolved images have been obtained using a CCD camera. Oxygen images will be obtained from phase resolved images. This work is supported by NIH grant PHS-P41-RR03155.