

**EPR imaging of tissue redox status**

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The purpose of the study was to obtain spatially resolved redox information (redox mapping) from biological tissues under noninvasive conditions using electron paramagnetic resonance imaging (EPRI) method. The method is based on the ability of the EPRI to measure spatially resolved pharmacokinetics data using a redox sensitive nitroxide probe. The principle of the redox mapping is described and validated using a biological sample. Redox mapping experiments were performed in RIF-1 murine tumor using low-frequency in vivo EPR imaging techniques with 3-CP nitroxide redox probe. The data show the existence of significant heterogeneity of redox status in the tumor. Also mice pretreated with BSO, a glutathione depleting agent, showed a decrease in the magnitude and distribution of the reducing equivalents in the tumor. Thus it is demonstrated that the redox mapping method by EPRI provides a noninvasive means of obtaining spatial and time-resolved pharmacokinetics information, which may be important in the understanding tumor physiology and therapy.