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Group Homepage	http://mri.yz.yamagata-u.ac.jp/
Main Subjects	<ol style="list-style-type: none"> 1. In vivo ESR measurement of redox status in living animals 2. Evaluation of anti-oxidation for various foods.

Content

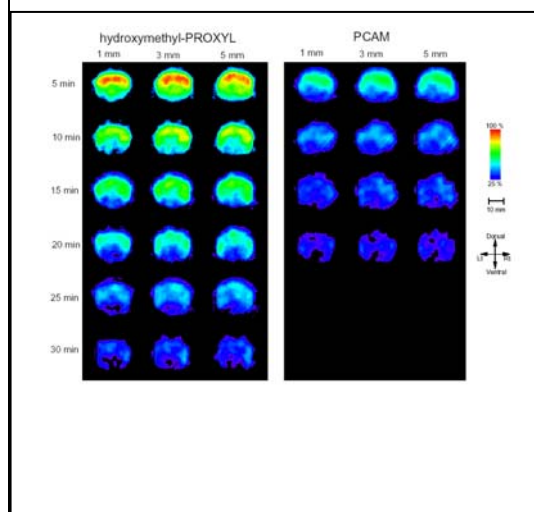


Figure 1. The time series of ESR images of the rat head.

Our group has developed a new ESR (EPR) technique, that is, the radio frequency ESR spectrometer equipped with an ESR imaging system. The advantages of this ESR system are the measurement of wet samples such as living animals such as a mouse or rat and the information of the redox status are obtained by the distribution of free radicals and the dynamics of spin-probe injected in living animals. Figure 1 shows the time course of ESR slice images of rat head and the redox status in the brain can be discussed from the reduction rate of hydroxymethyl-PROXYL or PCAM as a spin-probe

Second, our study is the development of new method for the evaluation of the active oxygen scavenging ability for various foods. The method is based on the competition reaction between scavengers and spin-trapping reagent to active oxygen species, which are superoxide, hydroxyl radical, singlet oxygen, and peroxide radical. In the ESR spin-trapping, active oxygen species is trapped by spin-trapping agent such as DMPO to form spin adduct. When the test sample is added into the system, the signal intensity of spin adduct is decreased with an increase in test sample concentration. Our goal is the total evaluation using these four active oxygen scavenging abilities for many foods.