

# **Spin Trapping of Radicals from Cells: the Affect of Pro- and Anti-Oxidants**

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We have had success in the spin trapping of radicals from cells. The spin trapping of superoxide has been possible in circumstances where this radical is produced in association with the plasma membrane. Other sites of production, such as mitochondria, have not been readily accessible.

The spin trapping of radicals produced during cellular lipid peroxidation has yielded a great deal of information. We have had the most success with the use of POBN to trap carbon-centered radicals generated in cells. These radicals appear to be the short chain radicals produced during fragmentation processes that can occur when lipid alkoxyl radicals are formed. As tools to probe these processes we have: 1. used singlet oxygen to increase membrane levels of LOOH; 2. alter the fatty acid profile of cells by supplementing cell culture media with fatty acids of different structures and degrees of unsaturation; 3. ferrous iron and dioxygen to produce a burst of radical formation; and 4. iron/ascorbate to study time-dependent oxidative processes in cells. Tools 1 and 2 alter the oxidizability of cells while 3 and 4 offer different methods of radical initiation. These approaches have allowed us to examine the fundamental mechanisms of how small molecule antioxidants and antioxidant enzymes function to protect cells from lipid peroxidation.