INTRODUCTION

The third international symposium on spin trapping and aminoxyl radical chemistry was held two years after the second meeting in this series. The symposium took place on 22–24 November 1991 in Kyoto, Japan. Funding for the visiting scientists and speakers was generously provided by a variety of industries in Japan. For this we were extremely grateful. This symposium was arranged to follow the meeting of the Society for Free Radical Research International held in the same location. Numerous individuals attended both conferences giving more exposure to research involving spin trapping. This special issue has been made possible by further generous donations from Japanese industry. Unfortunately it has taken some time to get this organized and the authors have been very patient. The fourth international symposium on spin trapping is currently planned for October 24, 1993 at the Oklahoma Medical Research Foundation in Oklahoma City, Oklahoma. The scope has been broadened to include organic EPR spectroscopy with applications in chemistry, biology and medicine.

It seems that spin trapping is at a turning point. Most of the obvious biological experiments in spin trapping utilizing PBN (or PBN-type) and DMPO (or DMPO-type) spin traps have been done. As an analytical tool spin trapping has some successes and some failures. Since at this time EPR is almost exclusively the only tool for monitoring the appearance of the spin adduct it is imperative to have a knowledgable EPR spectroscopist in the research group doing spin trapping. In this way, artifacts and spurious EPR signals can be evaluated correctly. The future seems to require better spin traps tailor-made to serve a particular need. In particular spin traps are needed which give more persistent spin adducts while still retaining high rate constants for spin trapping. This is the objective of the NIH sponsored center for spin trapping at Oklahoma.

A parallel research direction has developed wherein spin traps such as PBN exhibit beneficial effects in biological systems experiencing oxidative stress. Although it is assumed that the prophylactic effects of spin traps are due to the fact that they are capable of trapping free radicals, this correlation has not been proved in any system. A corollary to this point is that spin traps are probably good antioxidants but even this assertion has not been systematically tested.

In summary, spin trapping in biological systems has grown substantially beyond the scope visualized at its inception. However, much remains to be done. For example quantiative *in vivo* spin trapping needs attention perhaps with the help of radioactive labelling, chromatography and mass spectrometry. No clinical applications of spin trapping exist to date, and the mechanism for prophylaxis of spin traps needs to be elucidated. We are looking forward to the future events in spin trapping with interest.

Edward G. Janzen[1], Keisuke Makino[2] and Toshikazu Yoshikawa[3]

[1]Departments of Clinical Studies and Biomedical Sciences and MRI Facility, Ontario Veterinary College, University of Guelph, Guelph, Ontario, Canada N1G 2W1

and

National Biomedical Center for Spin Trapping and Free Radicals, Free Radical Biology and Aging Research Program, Oklahoma Medical Research Foundation, Oklahoma City, Oklahoma, 73104 U.S.A.

[2]Department of Polymer Science and Engineering, Kyoto Institute of Technology, Matsugasaki, Sakyo-ku, Kyoto 606, JAPAN

[3]First Department of Medicine, Kyoto Prefectural, University of Medicine, Kamigyo-ku, Kyoto 602, JAPAN