



## SPIN TRAPS - COMPOUNDS FOR SCIENTIFIC RESEARCHES

### Characteristic

«Spin traps» is a term for a chemical substances capable of reacting with active free radicals to form persistent paramagnetic compounds, called spin adducts (mainly a nitroxides), the later are registered by means of EPR spectroscopy. Spin probes are used for investigation of various processes in which free radicals play a role. EPR spectra of the spin adducts are used to determine the structure of the free radicals trapped and they provide data about kinetics and mechanisms of free-radical reactions in the system.

The Novosibirsk Institute of Organic Chemistry SB RAS has developed the technologies for production of highly purified spin traps. In decades of scientific researches in the field of nitrene chemistry we accumulated unique experience and developed original know-how on methods of synthesis of the spin traps and purification from the admixtures which are responsible for background signals and artifacts formation.

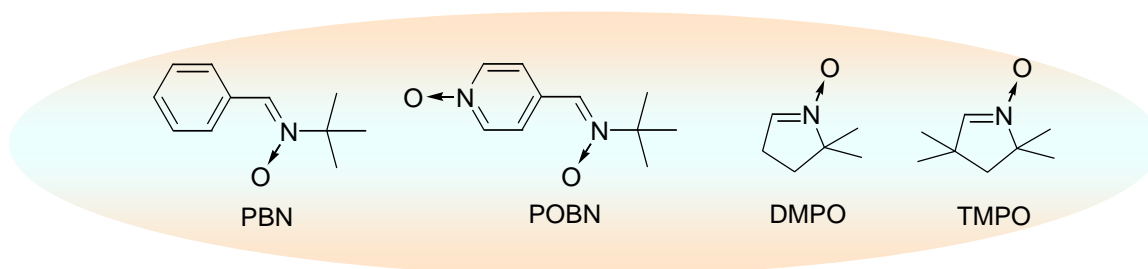


Fig. 1

Besides such a widely used spin traps as PBN, POBN, DMPO and TMPO (Fig.1) we produce the original 2*H*-imidazole 1-oxide spin traps (Fig.2).

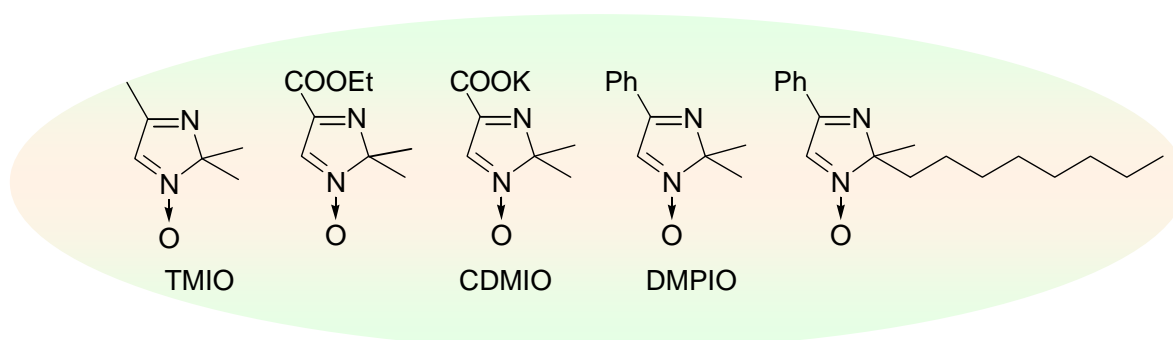


Fig. 2

**In comparison to other spin traps, these compounds have a number of important advantages:** they are of higher chemical stability in various media, they have a high electrochemical oxidation potentials ( $E_p=1.7-2.5$  V vs. s.c.e.) thereby providing more reliable information. Besides that, the spin adducts they form have higher lifetimes and more information can be taken from their EPR spectra.

### ***Technical and Economical Advantages***

The spin traps produced in the Novosibirsk Institute of Organic Chemistry SB RAS are inferior to none of the best commercially available samples in quality. We have been preparing the compounds for Acros Organics, Alexis, etc. The world consumption of the spin traps varies from some kilograms (PBN) to some hundreds of grams per year. The demand for the compounds is expected to increase due to development their applications in biomedical researches and new applications arising.

### ***Application Area***

The spin traps are used for investigation of various free-radical-mediated processes.

Large amounts of PBN, POBN and DMPO are used **in biophysical and biomedical researches for investigation of various pathologies development, such as cardiovascular and brain injury during ischemia-reperfusion, cancer, ageing, etc.** Intensive studies of protective effects of the nitron spin traps are carried, implying possible **pharmacological applications** of these substances.

Besides that, significant account of the PBN produced **is used for beer quality evaluation.**

### ***Level and Place of Practical Usage***

The compounds are synthesized in Laboratory of Nitrogen Compounds of the Novosibirsk Institute of Organic Chemistry SB RAS on request. Average annual production is 1-2 kg.

### ***Commercial Offers***

Institute supplies the compound on request.

We will consider any offers on distributor/dealer services.

### ***Approximate Cost***

The distributor's prices of the spin probes vary from 40 to 200 USD per 1 g.

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