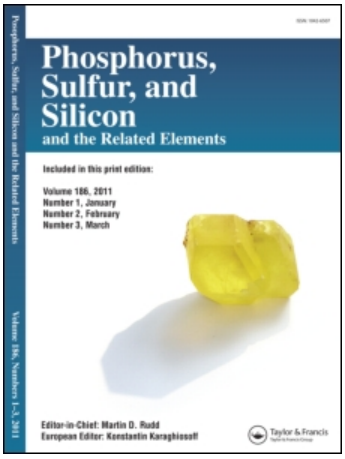

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Stabilisation, Analysis and Toxicokinetics of the Four Stereoisomers of the Nerve Agent Pinacolyl Methylphosphonofluoridate (Soman) in Rats

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Stabilisation, Analysis and Toxicokinetics of the Four Stereoisomers of the Nerve Agent Pinacolyl Methylphosphonofluoridate (Soman) in Rats

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Evidence has been accumulating in our laboratories over the last few years for a far greater in vivo persistence of the nerve agent soman than previously assumed. Such persistence may be relevant for the post-acute treatment of soman poisoning since the intact soman lingering in reversible storage sites may cause a relapse into the acute phase in poisoning and lengthen the period of recovery.

In order to obtain detailed information on the in vivo persistence of soman, we have started investigations on the toxicokinetics of soman in the rat. Since the four stereoisomers of C(±)P(±)-soman differ widely in their toxicological properties, these isomers should be analyzed individually. For this purpose, chiral capillary glc-columns and compatible internal standards were developed which can be used in combination with a highly sensitive alkali flame ionization detector in the gas chromatograph. The extreme reactivity of the soman stereoisomers in rat blood makes it necessary to develop stabilization procedures in which the various properties of the individual stereoisomers of soman are taken into account. Work-up of the stabilized blood samples is conveniently performed with Sep-Pak C_{18} cartridges. The estimated limit for quantitative analysis is ca. 4 pg isomer per rat blood sample. The blood levels of soman isomers are measured for several hours after i.v.-administration of 6 LD_{50} of soman to anaesthetized and atropinized rats, kept alive with artificial respiration. Results of these analyses and their toxicokinetic interpretation will be given.

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