

**Nitroxides as protectors against oxidative damage induced by the fenton system**

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The protective effect of nitroxides, six-membered piperidine derivatives, on deoxyribose oxidation to thiobarbituric acid-reactive substances by the Fenton system consisting of hydrogen peroxide and ferrous ions has been studied. Several newly synthesized nitroxides, analogs of Tempo (2,2,6,6-tetramethylpiperidine-1-oxyl), containing various substituents at the 4-position were tested and compared to Tempo. All nitroxides were found to be highly efficient antioxidants inhibiting the deoxyribose oxidation process in a concentration-dependent manner, while the extent of protection provided by nitroxides depends strongly upon their structure. The data obtained suggest that the oxidation of iron (II) rather than scavenging of hydroxyl radicals is the main mechanism of nitroxide protective action under the assay conditions used. Thus, the proven potency of nitroxides as good hydroxyl radical scavengers in simple systems may have little relevance in biological systems.