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Free radical of the semiquinone type generated in the redox reaction of hydroxybenzotropolone

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Participation of hydroxybenzotropolones in the free radical processes may be relevant to the transformation of environmentally important organic residues to humus substances. To elucidate this possibility we autooxidized PPG = 2,3,4,6-tetrahydroxy-5H-benzocyclohepten-5-on with O_2 in Na_2CO_3 solution. An intermediate stable radical of the semiquinone type $SO^{\cdot}$ revealed the hyperfine structure and a strong absorption band in the spectral region. The influence of reducing agent (ascorbate), stabilizer of the EPR signal (Zn^{2+}) and spin trap (DMPO) on $SO^{\cdot}$ EPR spectra was measured. The obtained results suggest that the PPG $SO^{\cdot}$ may undergo several processes such as dismutation, polymerization and addition. These processes are leading to humus-like dark macromolecular paramagnetic products probably containing tropolone moieties. Their physicochemical and physiological properties have not been yet carefully studied.