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OPTICAL AND EPR SPECTROSCOPY OF CERULOPLASMIN
REDOX REACTION PRODUCTS

T.Yu.Yakovleva, A.V.Barmasov, D.K.Toropov, V.Ye.Kholmogorov

Institute of Physics, Leningrad State University,
Uljanovskaya ul. 1, Petrodvorets, 198904 Leningrad, U.S.S.R.

Ceruloplasmin (Cp) - copper-containing blue oxidase of the mammalia blood plasma - participates in the process of donor-acceptor single electron transfer. Formerly we showed that electron transfer accompanied by changing of optical spectrum and EPR signal (Cu(II) copper center) was a result of reduction-oxidation reaction of Cp with ascorbate-ion. Further electron transfer from Cp with Cp optical and EPR properties recovery took place after the addition of electron acceptor (Fremi salt) in the reaction mixture. Fremi salt lost its paramagnetic properties as a result of this process.

This work is devoted to the investigation of redox reactions between p-phenylene diamine (electron donor), Cp (primary electron acceptor) and methyl viologen (secondary electron acceptor). Products of reaction were identified by optical and EPR spectroscopy methods. Intermediate products of reaction were characterized by absorption bands with maxima at 465, 485 and 600 nm and EPR signals with high resolved hyperfine structure. Final product of reaction was characterized by wide absorption band with maximum at 525 nm and did not possess paramagnetic properties.

Investigated system is of great interest for biochemists studying oxidase properties of Cp.

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2. T.Yu.Yakovleva and V.Ye.Kholmogorov, Proc. Intern. Symp. Photobiology and Biotechnology, Poznan, 1989, 112.