

R7-SUBSTITUTED 8-HYDROXYQUINOLINES WITH MULTIDRUG RESISTANCE SELECTIVITY: SOLUTION CHEMISTRY AND METAL COMPLEXATION

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8-hydroxyquinoline (8HQ) derivatives have a wide range of biological properties, including anticancer activity [1]. 8HQ-based Mannich bases with a methylamine subunit at position 7 (R7) are reported to have notable cytotoxicity, especially against multidrug resistant (MDR) cancer cell lines [2,3]. The biological activity of 8-hydroxyquinolines is often linked to complexation with the endogenous metal ions. The increased cytotoxicity of certain 8HQs on MDR cells is thought to result from either iron deprivation or the formation of redox-active copper(II) complexes [4].

Herein, studies on the interaction of five selected MDR-selective Mannich base HQ derivatives with Fe(II), Fe(III) and Cu(II) ions are presented in terms of solution speciation and redox properties of the forming complexes. The stoichiometry and formation constants of the complexes were determined via UV-visible spectrophotometric titrations. In the case of Cu(II) complexes, circular dichroism and electron paramagnetic resonance spectroscopy were also applied to confirm the coordination modes. To explore the redox properties of the iron and copper complexes cyclic voltammetric and spectroelectrochemical measurements were performed. The properties of the studied complexes are compared with those of non-MDR-selective 8HQs in order to identify differences in their solution chemical behavior.

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