

Mononuclear copper(II) nitrate complexes with methyl-substituted 4-nitropyridine N-oxide : physicochemical and cytotoxic characteristics.

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Three new complexes, products of the interaction of $\text{Cu}(\text{NO}_3)_2$ and methyl-substituted 4-nitropyridine N-oxides were synthesized and characterized by elemental analysis, magnetic, spectroscopic (IR, FIR and EPR), thermal and X-ray methods. The complexes (magnetic moments 1.70–1.81 BM at 300 K) of general formula $[\text{Cu}(\text{H}_2\text{O})(\text{NO}_3)_2\text{L}_2]$, $\text{L} = 2\text{-methyl-4-nitropyridine N-oxide}$ and $[\text{Cu}(\text{NO}_3)_2\text{L}'_2]$, where $\text{L}' = 2,6\text{-dimethyl-}$ and $2,3,6\text{-trimethyl-4-nitropyridine N-oxide}$ were obtained. The compounds were unstable upon dissolution. The X-ray single crystal structure of Cu(II) complex with 2,6-dimethyl-4-nitropyridine N-oxide was determined and analysed. The compounds and free ligands were tested in vitro on the cytotoxic activity against MCF-7 and SW-707 human cancer cell lines. The complexes with 4-nitropyridine N-oxide (a reference) and 2-methyl-4-nitropyridine N-oxide show a significant anti-proliferative activity against studied cell lines. A reciprocal relationship between the activity and the number of methyl groups was observed. Both ligands and complexes are cytotoxic active but to the different cell lines.

Słowa kluczowe

Copper complexes, Methyl-substituted 4-nitropyridine N-oxide, crystal structure, infrared spectra, EPR spectra, magnetic moments, cytotoxicity, Thermal decomposition

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