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SYNTHESIS, CHARACTERIZATION AND CYTOTOXICITY OF PHENOLIC COPPER(II) COMPLEXES

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In continuation of examination of the anticancer activity of metal-Schiff bases complexes,^[1] we synthesized three chelate complexes of phenolic Schiff bases and the life important Cu²⁺ ion.^[2] The obtained complexes were structurally characterized using experimental (IR and elemental analysis) and theoretical tools (Density Functional Theory). Comparison of experimental and calculated spectra of all complexes did not provide enough data to conclude which isomer prevails. On the basis of relative free energies, it is revealed that biologically the most active complex, with free phenolic OH group in *ortho* position, possess *trans*-square planar geometry (Figure).

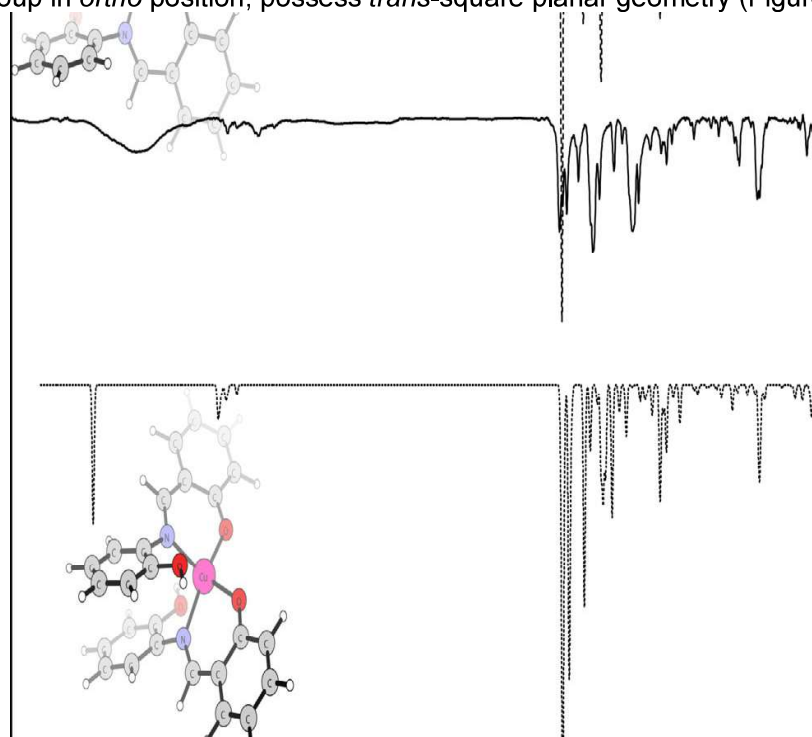


Figure: The optimised structure of the biologically the most active complex 1.

Biological *in vitro* testings on two cancer cell lines and one line of healthy cells (HCT-116, MDA-MB-231, and MRC-5, respectively) indicated that all examined complexes induced enormous oxidative/nitrosative stress followed with enhanced cytotoxicity of healthy and cancer cells.

^[1] V.P. Petrović, M.N. Živanović, D. Simijonović, J. Đorović, Z.D. Petrović, S.D. Marković, *RSC. Adv.*, **2015**, 5, 86274.

^[2] R.A. Festa, D.J. Thiele, *Curr. Biol.*, **2011**, 21, R877.

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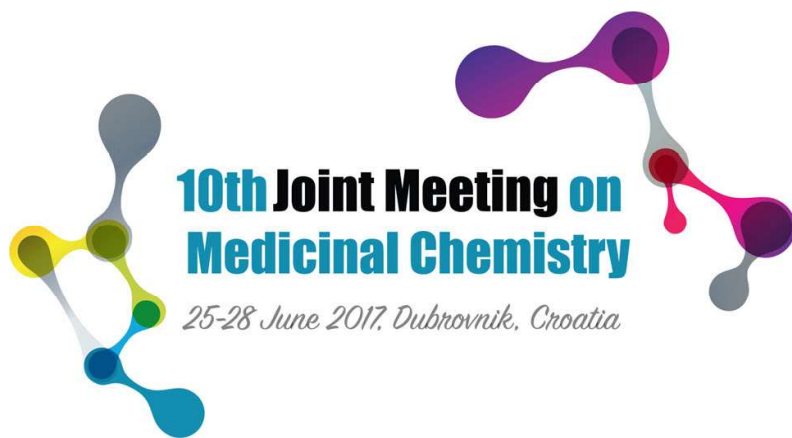
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