Poster Presentation

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Structural study of new cytotoxic heteroleptic Copper (II) complexes

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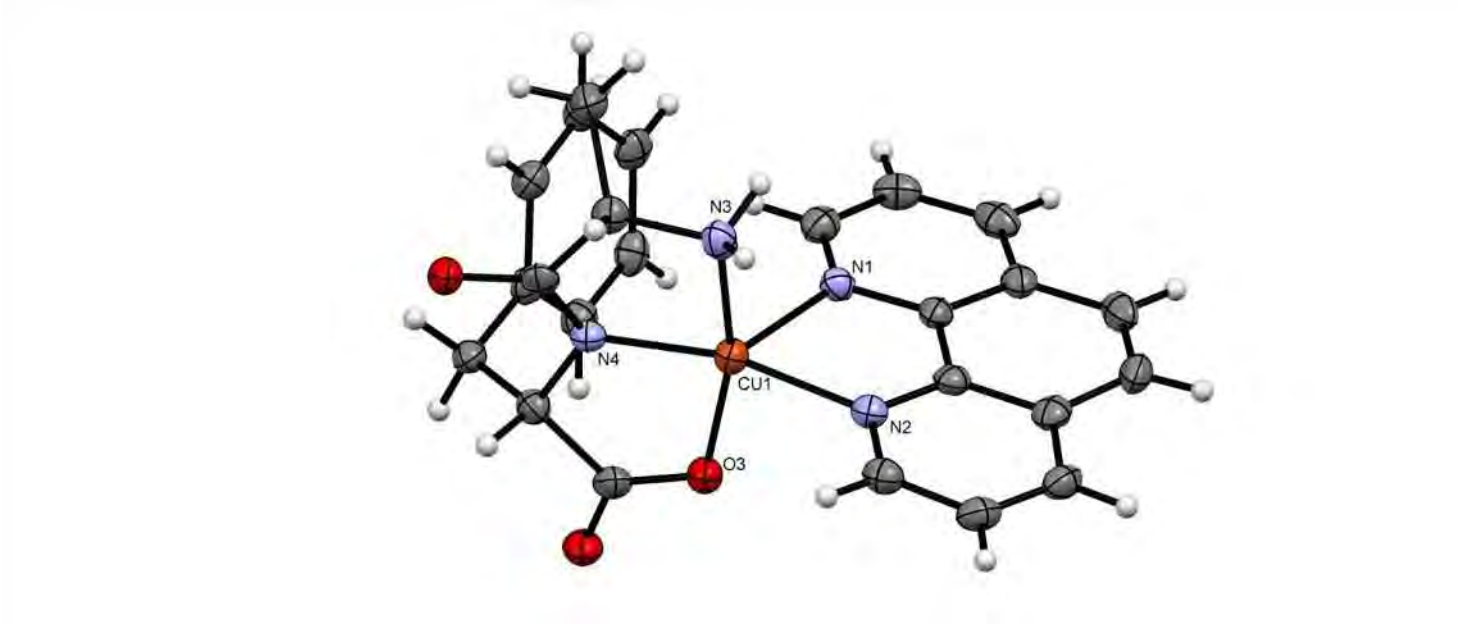
The widespread success of Cisplatin in the treatment of several neoplasias has arisen the interest in coordination compounds as drugs for the treatment of cancer. In the search for new compounds with antitumor activity, copper coordination complexes are being studied by our group. This work presents the synthesis and structural characterization of four new copper complexes with general stoichiometry [Cu(L-dipeptide)(phen)]•nH2O and their cytotoxicity against tumor cell lines. Single crystal X-ray diffraction experiments show that the copper ion is situated in a distorted squared pyramidal environment. The phen ligand is perpendicular to the plane defined by the coordinated dipeptide, therefore exposed and potentially available for interaction with biological molecules, e.g. DNA. The availability of the phen ligand and the physico-chemical properties of the complexes are modulated by the dipeptide. Complementary techniques (elemental analysis, infrared and UV-vis spectroscopies) were used to further characterize the complexes in solid state and aqueous solution, confirming that the coordination is maintained in solution. Lipophilicity and DNA binding constants were also measured, being able to discriminate between the behavior of even the complexes containing the ala-phe and phe-ala dipeptide. All the complexes induce cell death in the cell lines of human cervical adenocarcinoma, human metastatic breast adenocarcinoma and human lung epithelial carcinoma. Among the six complexes studied, [Cu(ala-phe)(phen)] presents the lowest half maximal inhibitory concentration (IC50) values. In an attempt to increase the activity, studies are presently being carried out using 2,9-dimethyl-10-phenanthroline. X-ray diffraction studies on the latter show slight deviations in the coordination geometries and different results are expected in their biological activities. Acknoledgements: CSIC, CAPES-UdelaR, PEDECIBA.

[1] *S. Iglesias, N. Alvarez, M.H. Torre, E. Kremer, J. Ellena, R.R. Ribeiro, R.P. Barroso, A.J. Costa-Filho, G.M. Kramer, G. Facchin, Journal of Inorganic Biochemistry, vol. 139, 2014, pp. 117-123.*



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