Title: DNA interaction and cytotoxicity studies of new ruthenium(II) cyclopentadienyl derivative complexescontaining heteroaromatic ligands

Author(s): Moreno, Virtudes[1]; Font-Bardia, Merce; Calvet, Teresa; **Lorenzo, Júlia**[2,3]; **Aviles, Francesc X.**[2,3]; Garcia, M. Helena[4]; Morais, Tânia S.[4]; Valente, Andreia[4]; Robalo, M. Paula[5]

Source: Journal of Inorganic Biochemistry

Volume: 105 **Issue:** 2 **Pages:** 241-249 **DOI:** 10.1016/j.jinorgbio.2010.10.009 **Published:** Feb 2011

Document Type: Article

Language: English

Abstract: Four ruthenium(II) complexes with the formula [Ru(eta(5)-C(5)H(5))(PP)L][CF(3)SO(3)], being (PP = two triphenylphosphine molecules), L = 1-benzylimidazole, 1; (PP = two triphenylphosphine molecules), L = 2,2'bipyridine, 2; (PP = two triphenylphosphine molecules), L = 4-Methylpyridine, 3; (PP = 1,2-bis(diphenylphosphine) ethane), L = 4-Methylpyridine, 4, were prepared, in view to evaluate their potentialities as antitumor agents. The compounds were completely characterized by NMR spectroscopy and their crystal and molecular structures were determined by X-ray diffraction. Electrochemical studies were carried out giving for all the compounds quasi-reversible processes. The images obtained by atomic force microscopy (AFM) suggest interaction with pBR322 plasmid DNA. Measurements of the viscosity of solutions of free DNA and DNA incubated with different concentrations of the compounds confirmed this interaction. The cytotoxicity of compounds 1234 was much higher than that of cisplatin against human leukemia cancer cells (HL-60 cells). IC(50) values for all the compounds are in the range of submicromolar amounts. Apoptotic death percentage was also studied resulting similar than that of cisplatin. (C) 2010 Elsevier Inc. All rights reserved.

Author Keywords: Ruthenium (II); Cyclopentadienyl Derivatives; X-Ray Structures; Antiproliferative Assays

KeyWords Plus: In-Vitro Cytotoxicity; Cancer-Cell-Growth; Nami-A; Arene Complexes; Crystal-Structure; Chemistry; Inhibition; Proliferation; Expression; Assay

Reprint Address: Moreno, V (reprint author), Univ Barcelona, Dept Quim Inorgan, Marti & Franques 1-11, Barcelona 08028, Spain.

Addresses:
1. Univ Barcelona, Dept Quim Inorgan, Barcelona 08028, Spain
2. Inst Super Engn Lisboa, Dept Engn Quim, P-1959007 Lisbon, Portugal
3. IST, Ctr Quim Estrutural, P-1049001 Lisbon, Portugal
4. Univ Lisbon, Ctr Ciencias Mol & Mat, Fac Ciencias, P-1749016 Lisbon, Portugal
5. Univ Autonoma Barcelona, Inst Biotecnol & Biomed, E-08193 Barcelona, Spain

E-mail Address: virtudes.moreno@qi.ub.es

Funding:

Funding Agency	Grant Number
Fundação para a Ciência e Tecnologia	PTDC/QUI/66148/2006
Ministerio de Ciencia e Innovacion de Espana	CTQ2008-02064 BIO2007-6846-C02-01
FCT	SFRH/BD/45871/2008

Publisher: Elsevier Science INC
Publisher Address: 360 Park Ave South, New York, NY 10010-1710 USA

ISSN: 0162-0134

Citation: MORENO, Virtudes; FONT-BARDIA, Merce; CALVET, Teresa; **LORENZO, Júlia**; **AVILES, Francesc X.**; GARCIA, M. Helena; MORAIS, Tânia S.; VALENTE, Andreia; ROBALO, M. Paula - DNA interaction and cytotoxicity studies of new ruthenium(II) cyclopentadienyl derivative complexescontaining heteroaromatic ligands. Journal of Inorganic Biochemistry. ISSN 0162-0134. Vol. 105, n.º2 (2011) p. 241-249.