

4th International Conference on

Medicinal Chemistry & Computer Aided Drug Designing

November 02-04, 2015 Atlanta, USA

The mode of action of new promising anticancer agents: Multifunctional polymer-ruthenium conjugates

Andreia Valente¹, M H Garcia¹, A Pilon¹, A P Matos¹, F Tortosa^{1, 2}, N Mendes³, F Gärtner³, A Preto⁴, R Francisco^{1, 4}, B T Buckley⁵ and F Marques¹

¹Universidade de Lisboa, Portugal

²Universitat Autònoma de Barcelona, Spain

³Universidade do Porto, Portugal

⁴University of Minho, Portugal

⁵Rutgers University, USA

A new family of multifunctional polymer-ruthenium conjugates for targeted delivery of chemotherapeutic agents has been synthesized and tested as anticancer agents. These drugs might provide potential tools to surmount many of the current limitations in conventional chemotherapy, including undesirable bio-distribution, cancer cell drug resistance and severe systemic side effects. Our approach constitutes an innovation relatively to other high molecular drugs reported in the literature mainly because an exact control of the amount of our cytotoxic drug in the polymeric chain is achievable due to our fine tune functionalization of the polymers (other approaches use a variable percentage of metal per quantity of drug). Studies of drug speciation in blood, cytotoxicity, apoptosis, autophagy, proliferation, *in vitro* drug internalization and release studies and ultrastructure analysis of cells led to the identification of a lead compound that has been subjected to *in vivo* studies in nude mice. *In vivo* studies comprise pharmacokinetics by controlling the amount of metal (Ru) in organs, tumor, blood and urine of mice. Hematological and biochemical parameters of the animals were evaluated as well as tumor regression and metastasis inhibition.

Biography

Andreia Valente completed her Ph.D. in 2010 from the Université de Lille I (France) on the field of Polymerization Catalysis. Then, she joined the Organometallic Group at Faculty of Sciences, University of Lisbon (Portugal) where she got a first post-doc position in synthesis of organometallic compounds for nonlinear optic applications, followed by a second post-doc in the field of medicinal inorganic chemistry. She is presently a researcher (academic) at the same Institution, directing now her efforts to the synthesis of new polymer-metal complexes as targeted drug-delivery systems in view to cancer therapy. To this ending, A. Valente counts with a multidisciplinary and enthusiastic team.

amvalente@fc.ul.pt

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