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Polymer 'ruthenium-cyclopentadienyl' conjugates: A new approach to fight cancer

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The continuous rising of cancer patients' death rate undoubtedly shows the pressure to find more potent and efficient drugs than those in clinical use, mainly based in platinum. These agents only treat a narrow range of cancer conditions with limited success and are associated with serious side effects caused by the lack of selectivity. The ideal situation is to have a drug that is only delivered to the tumor without affecting the healthy tissues. In this frame, our research group has recently published the synthesis and preliminary biological activity against several cancer lines of a new high molecular weight ruthenium-polymer complex.This conjugate incorporates a tumor-specific molecule attached to the polymeric chain and a cytotoxic fragment based on the "Ru-cyclopentadienyl" core, which presents high cytotoxic activity in several human cancer cell lines. The important potential of this family of polymer-ruthenium conjugates has been also revealed by studies of cellular uptake, molecular targets determination and pH-dependent release of the cytotoxic moiety. Our approach is different of those already reported in the literature, and we expect that it will lead to different reactivity patterns and thus a different model of behavior. Within the present presentation we will unveil possible targets and mechanism of action of this new family of ruthenium-polymer conjugates.

Biography

Andreia Valente completed her PhD 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.

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