

# Cancer Diagnostics Conference & Expo

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## New ruthenium phthalocyanines in modulation of nitric oxide and singlet oxygen release: Physical chemical characterizations and improvement of cytotoxicity with liposomes against cancer cells

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The use of metallodrugs has been successfully employed against certain tumors. New compounds, structural modifications, drug delivery systems and alternative cancer therapies as Photodynamic therapy (PDT), has been used to improve selectivity, effectiveness and minimize undesirable effects. This work describes the physicochemical characterization as well the influence of the charge in the sub-cellular localization, mechanisms of action and cytotoxicity properties of new ruthenium-phthalocyanines complexes [Ru(Pc-COOH)Cl] or [Ru(Pc-(COOH)<sub>4</sub>)Cl]. The substituted phthalocyanines with either one or four carboxyl groups were synthesized using microwave techniques and physical-chemical characterization were described using UV-visible, infrared, nuclear magnetic resonance, fluorescence and mass spectrometry. The cellular viability was evaluated using the MTT/MTS with B16F10, MNT-1 and L929 cells. The electronic spectrum of the compounds in dimethylsulfoxide presents intense absorption in 660 nm region (band-Q). The singlet oxygen quantum yield obtained using 1,3-diphenylisobenzofuran and DAF-2/DA was used to evaluate intracellular nitric oxide production. The laser stimulation increase DAF-2/DA fluorescence intensity, this results show the potential of these complexes as singlet oxygen and NO donors. The phthalocyanines were not cytotoxic in healthy cells and the phthalocyanine with one carboxyl group was more cytotoxic than the other with four carboxyl groups towards B16F10 with light irradiation. The incorporation of phthalocyanines into liposomes decreases significantly tumor cell viability. These results highlight the importance of complex localization to activity. Western Blotting and DNA interaction analysis are being developed to understand the role of the ruthenium complexes on the cytotoxicity and relationship between structure/death mechanisms.

### Biography

Ramos L C B has completed her graduation from Universidade Estadual Paulista "Júlio de Mesquita Filho" (UNESP), Master's in Pharmaceutical Sciences in 2012 from São Paulo University (Faculdade de Ciências farmacêuticas de Ribeirão Preto - FCFRP in 2012. Presently, she is pursuing her Master's in Chemical and Biological Physics and working on synthesis, characterization, evaluation of the antitumor activity of ruthenium complexes releasing nitric oxide (NO), fitalocianinas and photodynamic therapy.

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