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Evaluation of the antitumoral effects and mechanisms of action of novel binuclear Cu-complexes on tumorigenesis

Zeinab Ghasemishahrestani
Federal University of Rio de Janeiro, Brazil

Cancer is one of the major causes of death across the world. Hence, the development of chemotherapeutic strategies involving novel antitumor agents has been the focus area of cancer treatment. The anticancer activities of copper complexes have been the focus of much research to discover novel anticancer agents. Current study deals with the effects of two novel binuclear copper (II) complexes with N_2O-doner tridentate ligands (R9 and R10) on cytotoxic effects on the breast (MCF-7), lung (A549) and prostate (PC3) cancer cell lines. MCF-7, A549, and PC3 cell lines were analyzed using MTT assay and Flow Cytometry intracellular ROS production assay. MCF-7, A549, and PC3 treated with R9 showed an IC50 of 1.282±0.14, 1.428±0.07 and 1.60±0.08, respectively. On the other hand, MCF-7, A549 and PC3 cell lines affected by R10 exhibited (IC_{50}=1.006±0.18, IC_{50}=1.138±0.22, IC_{50}=1.44±0.12, respectively). Flow cytometry assay for MCF-7 and A549 at three different concentrations 0.5, 1 and 2μM illustrated that cells tested with R9 and R10 presented ROS accumulation in a dose-dependent manner. In the case of testing, some of R9 and R10 concentration, the increase of ROS production was even higher than the positive control, doxorubicin. Cytotoxicity and induction of high amount of ROS may be considered R9 and R10 a potential therapeutic agent for breast, lung and prostate cancer. We will further work on these compounds to understand the exact mechanism of action of these novel complexes to pursue our investigation on their effects *in vitro* and *in vivo*.

Biography

Zeinab Ghasemishahrestani has completed her MSc in Biochemistry from Pune University in India with O grade and she is doing the PhD in UFRJ in Brazil regarding cancer research under the guidance of professors Marcos Dias Pereira and Andre Luis Souza dos Santos. She is publishing 5 papers in reputed journals.

farzaneh.ghasemi.sha@gmail.com

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