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New compouds of ruthenium present potential of treatment for Cancer

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The limitations of cisplatin-based chemotherapy, including high toxicity, undesirable side effects, and drug resistance, have motivated extensive investigations into alternative metal-based cancer therapies. A range of ruthenium's complexes has been synthesized and tested for antitumor properties. Ruthenium (II) complexes are increasingly attracting the interest of researchers due to their promising pharmacological properties and selectivity to cells tumor. The aim of this work was to study of the cytotoxicactivity, arrest cell cycle and the mechanism of apoptosis of many cell lines induced by ruthenium compound Ru *in vitro* in many line cell tumors. The present study determined the effects of the compounds in S180, A549, K562 and Erlich tumor cells lines in the cytotoxicity, cell cycle distribution, induction apoptosis, mitochondrial membrane potential, caspase activity and mRNA expression of genes bax and caspase-3 and 8. The MTT assay revealed that the IC_{50} for the compound after 48 h of incubation with S180 cells was approximately 31.15 μM. Cell cycle analysis revealed that some compounds of Ru(II) were capable of changing cell cycle distribution since the percentage of cells in the G1 phases is increased. In addition, treatment with these compounds induced apoptotic cell death in S180, A549, K562 and Erlich tumor cells, demonstrated by the increased numbers of Annexin V-positive cells, activation of caspase-3 and 9 and marked decrease in mitochondrial membrane potential. Real-time RT-PCR analysis revealed that Ru increased significant mRNA expression of many biomarket like bax and caspase-3. In summary, the new compounds of ruthenium displayed a significant effect of cytotoxicity through cell cycle arrest and apoptotic induction in many tumor line cells, which suggests these compounds might have therapeutic potential anticancer activity.

Biography

Elisângela de Paula Silveira Lacerda has completed his Ph.D. at the age of 25 years from Federal University of Uberlnadia in Genetics and Biochemistry. She is the Professor of the Federal University of Goiás and the president of the Society of Genetics Region Goiás. She has published more than 20 papers in reputed journals and serving as an editorial board member of repute.

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