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An investigation on the effect of novel rhenium compounds on breast, prostate, leukemic and brain cancer cell lines

Cancer is a class of diseases that results in an abnormal, uncontrolled growth of cells. According to the American Cancer Society, half of all men and one-third of all women in the United States will develop cancer at some point in their lifetime. Cisplatin, carboplatin, oxaliplatin and related metalldrugs are extensively being used in the treatment of a variety of cancers. Unfortunately these drugs are highly toxic and become drug-resistance. These circumstances have led researchers to look for new cytotoxic agents which exhibit less toxicity and are devoid of drug resistance. It is believed that cisplatin and related drugs directly bind to genomic DNA through purine bases. Synthesis of new metalldrugs which do not follow the above mechanism of action might yield better drugs with less toxicity and is devoid of drug resistance. Recently we have demonstrated that several anticancer rhenium compounds do not directly bind to DNA. The findings of this report suggests that these newly synthesized rhenium compounds shows bioactivity and cytotoxicity against human triple negative and receptor positive breast, prostate, leukemia and brain cancer cells as evidenced by Trypan Blue assay, MTT assay, Flow cytometric analysis, JC1 Mitochondrial potential assay and TUNEL assay. Initial ADME studies have shown very positive pharmacokinetic data. Further investigation is currently being pursued for *in vivo* studies in cancer model mice. These novel rhenium compounds have the potential to be cheaper, more readily available and better alternatives to platinum based drugs used in cancer therapy.

Biography

Hirendra Banerjee is a Professor of Natural Sciences. He has worked with a number of prominent scientists and researchers, including his PhD advisor Dr. S. Dutta, an "excellent mentor" who continues to teach and conduct research at the age of 80, Dr. Lawrence DeLucas, the Director of the Center for Biophysical Sciences and Engineering at the University of Alabama-Birmingham, who supported him and taught him to write grants in his lab and with whom he continues to collaborate till date and Dr. Günter Blobel, a Nobel prize winner for his discoveries in the field of hereditary genetics with whom he has worked at Rockefeller University.

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