

SYNTHESIS OF N-HETEROCYCLIC CARBENE-PLATINUM COMPLEXES TARGETING MITOCHONDRIA TO COMBAT GLIOBLASTOMA

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ABSTRACT:

Nowadays, glioblastoma is the most aggressive and most common brain tumor. Current therapy consists of a surgical resection followed by a combination of radiation and chemotherapy with temozolomide. However, the median survival rate for patients with treatment is approximately of 15 months, and these treatments are associated with numerous side effects [1]. It is now admitted that Cancerous Stem Cells (CSCs) are of particular interest because they play a key role in the therapeutic resistance of various cancers [2,3], like this one, which results in relapse, and therefore need to be eradicated.

The aim of this project is to design and evaluate new platinum complexes to simultaneously eradicate glioblastoma cancer cells as well as glioblastoma Cancerous Stem Cells. Considering that CSCs can be efficiently killed by compounds that alter the function of mitochondria [2], we propose the synthesis of N-Heterocyclic Carbene-platinum complexes presenting or not mitochondria targeting moieties, such as a triphenylphosphonium group.

So far, different platinum complexes have been synthesized and they were tested *in vitro* to determine their cytotoxicity on a human glioblastoma cell line (U87) as well as on a human glioblastoma stem cell line (NCH421K). The results show that several compounds possess a high capacity to kill both cancerous cell lines.

References

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