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Investigation of the anticancer activity of electron-deficient organometallic complexes

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Ruthenium and osmium complexes are considered as an attractive alternative to platinum-based anticancer drugs since the latter have major disadvantages such as high toxicity, low selectivity and chemoresistance. We have recently developed strong interest in electron-deficient ruthenium and osmium complexes and investigated their anticancer properties. The design of such molecules, with possibilities of altering their activity by introducing different ligands, is of a great importance, as well as unveiling their mechanisms of action. Their cytotoxicity towards human colon HCT116 $p^{53+/+}$ and HCT116 $p^{53-/-}$ cancer cell lines has been investigated, including the effects these precious metal complexes have on different genes involved in DNA damage responses, cell cycle arrest, and apoptosis. Their mechanism of action has been explored further by cell cycle analysis and investigation of the oxidative stress they induce in cells.

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