Biological evaluation of tris-heteroleptic ruthenium complexes with DNA and BSA, docking studies analysis

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The coordination chemistry of ruthenium complexes with polypyridyl ligands is one of the most extensively studied area for potential anticancer drugs due to their catalytic reactions, photochemistry and redox properties [1-3]. As it has been proven, the interactions of these complexes with biomolecules such as CT-DNA and serum transport proteins are of great importance [4]. There is a plethora of ruthenium complexes with bidentate chelating ligands such as 2,2'-bipyridine (bpy) or 1,10-phenanthroline (phen) which exhibit intriguing interactions with biomolecules and show significant anticancer activity. Furthermore, the ligand 2-(2-pyridyl)-quinoxaline (pq) shows medicinal interest because of its antibacterial and anticancer activity [5,6].

For all the aforementioned reasons, two tris-chelated ruthenium polypyridyl complexes were synthesized in our laboratory. The interactions of these metal compounds with biomolecules delve into their possible anticancer properties. Both complexes $[Ru(pq)(bpy)_2](PF_6)_2$ and $[Ru(bpy)(phen)(pq)](PF_6)_2$, were studied for their binding affinity to bovine serum albumin (BSA) by UV-Visible absorption and emission spectroscopy. Finally, in an effort to evaluate their biological activity, DNA and BSA docking studies were performed.

References

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