Synthesis of Silver Compounds with Potential Anti-Cancer Activity: Silver(I) Complexes with Xylyl-Substituted Heterocyclic Thiones and Selones

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Silver has been used since ancient times as a way to combat bacterial infections. Before the introduction of modern antibiotics, silver was mainly used for its bactericidal properties. However, silver also exhibits cytotoxicity towards cancer cells, which would provide a safer treatment for those with this illness. Within this project, four different silver complexes have been synthesized with a saturated pyrimidine 6-membered ring. These complexes also contain a thione or selone functional group within the ligand, as well as 2,6- xylyl, otherwise known as dimethylbenzene. The general formula of the ligand is SypmXyE, where E is either sulfur or selenium. The ligand is reacted with silver (I) perchlorate and silver (I) tetrafluoroborate, with a formula of [Ag(SpymXyE)2]+X, where X is perchlorate or tetrafluoroborate. All four compounds have been fully characterized using 1H- and 13C-NMR data, IR data, melting point, and x-ray crystallization.

Awards Won:
Fourth Award of $500