Synthesis, Characterization And In Vitro Antitumor Screening Of Novel Gold (I) & (III) Complexes

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With the discovery of the cytotoxic properties of Auranofin and other gold compounds that were originally developed as treatments for rheumatoid arthritis, there has been ongoing interest in gold compounds, specifically focused on developing them into antitumor agents. In this study, our goals are to synthesize various novel gold(I) and (III) complexes and evaluate their antitumor activity by in vitro analysis through the NIH Developmental Therapeutics Program. This work reports on the synthesis of ten gold(I) and gold(III) thiolate, dithiocarbonate and dithiocarbamate compounds. For example, (5-methyl-1,3,4-thiadiazole-2-thiolato)-triphenylphosphine gold(I) (shown) was successful synthesized by dissolving 5-methyl-1,3,4-thiadiazole-2-thiol and triphenylphosphine gold(I) chloride in a mixture of dichloromethane and triethylamine. The pure crystalline product was recovered after slow evaporation of the solvent followed by washing and filtration steps. The in vitro data suggest anti-tumor activity of this compound at a concentration of 10-5 M. Syntheses, X-ray structural characterization, NMR spectroscopy, elemental analysis, LC/MS and in vitro anti-tumor activity data for this novel series of gold(I) and gold(III) complexes will be presented.

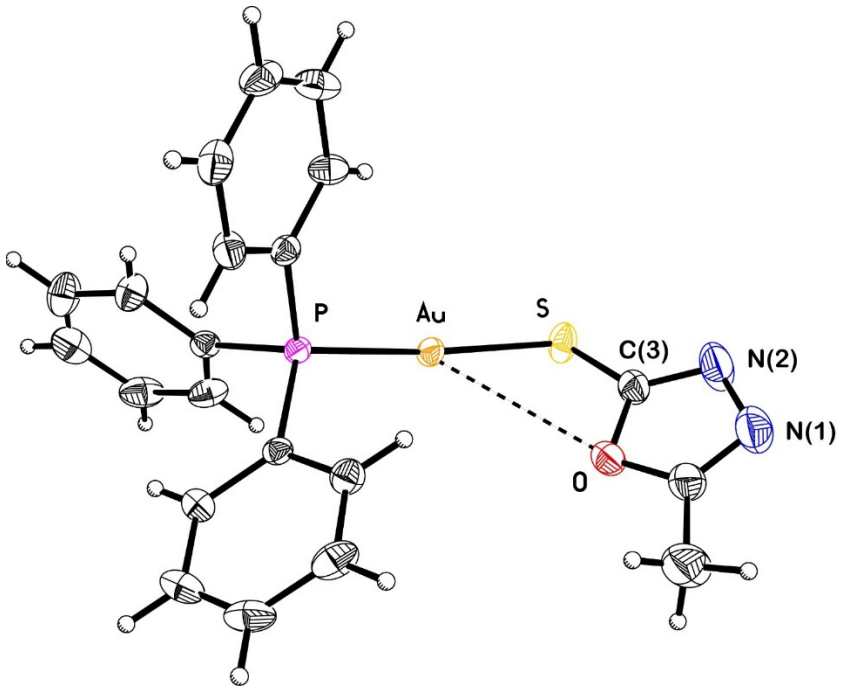

Figure 1