Abstract

The biological activity of three mixed ligand silver-bis(diphenylphosphino)alkanes-dibenzyldithiocarbmate, with 1:1:1 composition, have been studied. Three complexes i.e. $[Ag_2(dppm)_2(S_2NC_{15}H_{15})_2]$ **(1)**, $[Ag_2(dppe)_2(S_2NC_{15}H_{15})_2]$ **(2)** and $[Ag_2(dppb)_2(S_2NC_{15}H_{15})_2]$ **(3)** were synthesized using silver nitrate, 1,1-bis(diphenylphosphino)methane (dppm), 1,4-bis(diphenylphosphino)butane (dppb), 1,2-bis(diphenylphosphino)ethane (dppe), and dibenzyldithiocarbamate (DBDTC). It was observed that complexes **(1-3)** were light stable as their syntheses were done under ambient conditions. The molecular structures of all these complexes were confirmed by elemental analysis, FTIR, ^{13}C NMR and ^{1}H NMR spectroscopic techniques. Moreover, complex **(3)** was also illustrated by single-crystal X-ray diffraction analysis. The antibacterial activities were estimated by the zone of inhibition (ZOI; mm±SD), and all of these silver (I) complexes exhibited broad spectrum biological potential against selected Gram-negative (*Salmonella typhi* and *Salmonella setubal*) as well as Gram-positive (*Micrococcus luteus, Staphlococcus aureus* and *Enterobacter aerogens*) bacterial strains.

Keywords: Silver nitrate, Bis(diphenylphosphino)alkanes, Dibenzyldithiocarbamate, biological activity