Bis(phosphane)copper(I) and silver(I) dithiocarbamates: crystallography and anti-microbial assay

ABSTRACT

The crystal and molecular structures of (Ph3P)2M[S2CN(Me)CH2CH2OH], M=Cu, isolated as a 1:1 dichloromethane solvate (1·CH2Cl2), and M=Ag (4) show the central metal atom to be coordinated by a symmetrically (1·CH2Cl2) and asymmetrically chelating (4) dithiocarbamate ligand. The distorted tetrahedral geometries are completed by two PPh3 ligands. The presence of hydroxyl-—···S(dithiocarbamate) hydrogen bonds leads to centrosymmetric dimeric aggregates in each crystal structure. In the molecular packing of 1·CH2Cl2, channels comprising 1 are formed via aryl-C–H···O interactions with the solvent molecules associated with the walls of the channels via methylene-C–H···S, π(aryl) interactions. For 4, the dimeric aggregates are connected via a network of aryl-C–H···π(aryl) interactions. Preliminary screening for anti-microbial activity was conducted. The compounds were only potent against Gram-positive bacteria. Some further selectivity in activity was noted. Most notably, all compounds were active against methicillin resistant Staphylococcus aureus.

Keyword: Copper(I); Crystal structure analysis; Dithiocarbamate; Silver(I); X-ray diffraction