Pathogenic Gram-positive bacteria are highly sensitive to triphenylphosphanegold(O-alkylthiocarbamates), Ph3PAu[SC(OR)=N(p-tolyl)] (R = Me, Et and iPr)

ABSTRACT

The phosphanegold(I) thiocarbamides, Ph3PAu{SC(OR)=NC6H4Me-4} for R = Me (1), Et (2) and iPr (3), have been shown to have essentially linear gold atom coordination geometries defined by phosphane-P and thiolate-S atoms, and exhibit minimum inhibitory concentration (MIC) values in the range of 1–37 μg/ml against four Gram-positive bacteria, namely Bacillus cereus, Enterococcus faecalis, Enterococcus faecium and Staphylococcus aureus; compounds 1–3 are less potent against a broad panel of 16 Gram-negative bacteria. As the minimum bactericidal concentration values were quite similar to the MIC values, compounds 1–3 are effective bactericidal agents. The specific action against the four Gram-positive bacteria suggests they function by inhibition of peptidoglycan synthesis.

Keyword: Antimicrobial activity; Gold(I) compounds; Gram-positive bacteria; Metal-based drugs; Phosphanegold thiolates; Thiocarbamides