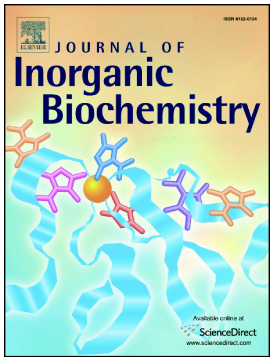

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Dinuclear silver(I)-*N*-heterocyclic carbene complexes: Synthesis, characterization and larvicidal activity of bis-imidazolium dinuclear silver(I)-*N*-heterocyclic carbene complexes

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Abstract

New synthesized bis-imidazolium salts that are linked by xylyl derivatives moiety, **1**-**4** was reacted with Ag_2O to facilitate the formation of dinuclear Ag(I)-*N*-heterocyclic carbene (NHC) complexes, **5**-**8**, respectively. All the synthesized ligand salts and complexes were characterized by ^{1}H- and ^{13}C-NMR, FTIR spectroscopy and elemental analysis. Molecular structures of compounds **3**, **5**, and **7** were elucidated by single crystal X-ray diffraction analyses. Larvicidal studies against the *Aedes aegypti* and *Culex quinquefasciatus* were carried out on all synthesized compounds following the World Health Organization standard larval susceptibility test. All the imidazolium salts were found inactive while the activity of the dinuclear Ag(I)-NHC complexes on mosquito larvae are varies with the nature of the ligands. Complex **7** has high activity on *Ae. aegypti* and *Cx. quinquefasciatus*, emphasising its potential as a larvicidal compound.

Keywords: Imidazole, Ag(I)-NHC complex, X-ray diffraction, Larvicidal, *Ae-aegypti*, *Culex quinquefasciatus*