N-Heterocyclic Carbene (NHC) Derivatives of 1,3-Di(benzyloxy)imidazolium Salts

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1-Hydroxyimidazole-3-oxide (**1**) was alkylated with benzyl bromide in the presence of $NaHCO_3$ to give the new 1,3-di(benzyloxy)imidazolium bromide **2a** which was converted to the hexafluorophosphate **2b** and bis(trifluoromethylsulfonyl)imide **2c**. From this cation, pyridine generated a carbene which was trapped by sulfur or selenium to yield the respective 2-thione **3** or 2-selone **4**. Bromination afforded the 2-bromo derivative **5**. Reaction of the hexafluorophosphate **2b** with silver oxide gave the silver-*N*-heterocyclic carbene complex **6** which was transmetallated with $Au(Me_2S)Cl$ to the gold-carbene complex **7**. A rhodium-carbene complex **8** was obtained by reaction of the hexafluorophosphate **2b** with $[Rh(cod)Cl]_2$ in the presence of triethylamine. Eight crystal structures were determined by X-ray diffraction. The *N*-benzyloxy groups are twisted out of the plane of the imidazole ring in the solid state. They adopt *syn* conformations in the cation of the hexafluorophosphate **2b** and in the metal-carbene complexes **6** – **8**, but *anti* conformations in the thione **3** and selone **4**. Both conformations were observed in two polymorphs of the 2-bromo compound **5**.

Key words: Carbene, Gold, Imidazolium Salt, Ionic Liquid, NHC, Rhodium, Silver