Two silver 5,5-diethylbarbiturate (barb) complexes with 2,2'-bipyridine (bpy) and 3-(2-pyridyl)propanol (pypr), [Ag(barb)(bpy)] (1) and [Ag(barb)(pypr)] (2), have been prepared and characterized by elemental analysis, IR spectroscopy, thermal analysis, and single crystal X-ray diffraction. Both complexes crystallize in the triclinic space group $P\bar{1}$ with $Z = 2$. The barb ligand in 1 is N-coordinated and the bpy ligand acts as a bichelating ligand leading to an AgN$_3$ tricoordination. Crystals of 1 feature a three-dimensional network based on N–H···O hydrogen bonding, π(bpy)···π(bpy), C–H···π(bpy) and π(bpy)–Ag interactions. In 2, the pypr and barb ligands behave as monodentate ligands through their N atoms, forming a distorted linear AgN$_2$ coordination. Molecules of 2 are doubly bridged by N–H···O hydrogen bonds and further connected via O–H···O hydrogen bonds and aromatic π(pypr)···π(pypr) stacking interactions into a supramolecular network. Both complexes exhibit similar thermal decomposition behavior in air. The first stage corresponds to removal of the co-ligands such as bpy or pypr while the degradation of the barb moiety occurs at higher temperatures to give Ag$_2$O. Like the barb, bpy and pypr ligands, 2 does not show any significant antimicrobial activity, but 1 is active against bacteria and fungi.

Key words: 5,5-Diethylbarbiturate, 2,2'-Dipyridine, 3-(2-Pyridyl)propanol, Silver(I), Crystal Structure