

# 5,5-Diethylbarbiturate Complexes of Silver with 2,2'-Bipyridine and 3-(2-Pyridyl)propanol: Syntheses, Crystal Structures, Spectroscopic, Thermal and Antimicrobial Activity Studies

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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  $\text{AgN}_3$  tricoordination. Crystals of **1** feature a three-dimensional network based on  $\text{N-H}\cdots\text{O}$  hydrogen bonding,  $\pi(\text{bpy})\cdots\pi(\text{bpy})$ ,  $\text{C-H}\cdots\pi(\text{bpy})$  and  $\pi(\text{bpy})\text{-Ag}$  interactions. In **2**, the pypr and barb ligands behave as monodentate ligands through their N atoms, forming a distorted linear  $\text{AgN}_2$  coordination. Molecules of **2** are doubly bridged by  $\text{N-H}\cdots\text{O}$  hydrogen bonds and further connected *via*  $\text{O-H}\cdots\text{O}$  hydrogen bonds and aromatic  $\pi(\text{pypr})\cdots\pi(\text{pypr})$  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  $\text{Ag}_2\text{O}$ . 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