Bis–(5,5'–diethylbarbiturato)copper(II) and cadmium(II) Complexes with Ethylenediamine

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5,5'–diethylbarbituratic acid (barbH), also known as barbital is a barbiturate derivative used as a sedative and hypnotic drug, especially in the form of sodium barbital. Two new bis(5,5'–diethylbarbiturato) (barb) complexes of copper(II) and cadmium(II) with ethylenediamine (en) structurally characterized. *cis*–[Cu(barb)$_2$(en)] **1** crystallizes in the monoclinic space group of *C*2/*c* and its asymmetric unit contains a half of the molecule, which has two–fold crystallographic symmetry. **1** consists of neutral monomeric units, in which, the copper(II) ion exhibits a highly distorted octahedral geometry by two barb anions and a neutral chelating en ligand. The individual molecules of **1** are held together by N–H···O hydrogen bonds, forming a three–dimensional network.

{[Cd(barb)$_2$(μ–en)]·2H$_2$O}$_n$ **2** is a one–dimensional coordination polymer and also crystallizes in the monoclinic crystal system ($P2_1/c$). In **2**, {[Cd(barb)$_2$(en)] building blocks are connected in a zigzag arrangement by bridging NH_2 groups of en into a chain running parallel to the *c* axis, and the individual chains are further stacked by O–H···O and N–H···O hydrogen bonds to form a three–dimensional supramolecular framework. The barb ligands in both complexes act as bidentate ligands *via* the negatively charged imino N atom and one of the carbonyl O atoms adjacent to the imino N atom.

Keywords: 5,5'–diethylbarbiturate, ethylenediamine, copper(II)