Investigation of the effect of sodium azide on the coordination mode of flexible ONO-donor hydrazone ligand in preparing manganese coordination compounds.

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Streszczenie

Mononuclear Mn(II) coordination compound, $[Mn(H_2L)Cl_2]$ (**1**), was synthesized by the reaction of H_2L and $MnCl_2·4H_2O$ in methanol where H_2L is tridentate ONO-donor hydrazone ligand [H_2L = (*E*)-*N′*-(2-hydroxy-5-iodobenzylidene)isonicotinohydrazide]. The reaction of H_2L with $MnCl_2·4H_2O$ in the presence of excess amount of NaN_3 in methanol gave an azido bridged dinuclear Mn(III) coordination compound, $[Mn_2(L)(\mu\text{-}N_3)_2(CH_3OH)_2]$ (**2**), whereas in the presence of low amount of NaN_3, a phenolate bridged dinuclear Mn(II) coordination compound, $[Mn_2(HL)_2(CH_3OH)_2Cl_2]·CH_3OH$ (**3**), was obtained. These compounds were characterized by elemental analysis, spectroscopic methods, single crystal X-ray analysis and magnetic measurements. The structural studies indicated that the ligand is coordinated as ONO-donor ligand in **1–3** and behave as a neutral, dianionic and monoanionic ligand in compounds **1**, **2** and **3**, respectively. There is a good agreement between spectroscopic properties and structures of the compounds. Several synthetic attempts indicated that the azide anion has considerable effect on the formation of phenolate bridged dinuclear Mn(II) coordination compound which attributed to its general basic properties. Magnetic measurements indicate the formation of dinuclear molecules with ferromagnetic intramolecular couplings in the case of **2** and **3** as well as with much weaker and distributed antiferromagnetic interactions among the dinuclear units of these compounds.

Słowa kluczowe

Manganese coordination compounds, Hydrazone ligand, Crystal structure, Spectroscopic studies, Magnetic properties

Adres publiczny

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