The crystal structure of $\text{L'}\text{Cu(Me}_2\text{CO)}\text{Nd(NO}_3\text{)}_3$ ($\text{L'} = \text{N,N’-bis(2-hydroxy-3-methoxybenzylidene)-ethylenediamine}$) was determined and the magnetic properties of the complex were investigated. ($\text{C}_{18}\text{H}_{18}\text{N}_2\text{O}_4\text{Cu(C}_3\text{H}_4\text{O)}\text{Nd(NO}_3\text{)}_3$, monoclinic, space group $P2_1/c$, with $a = 9.8792(9)$, $b = 18.904(4)$, $c = 15.667(2) \, \text{Å}$, $\beta = 95.360(10)^\circ$, $V = 2913.1(8) \, \text{Å}^3$, $Z = 4$. The central region of the complex is occupied by Cu$^{II}$ and Nd$^{III}$ ions which are bridged by two phenolate oxygen atoms of the ligand. The copper ion adopts a square-based 4+1 coordination made, the basal N$_2$O$_2$ donors being afforded by the ligand while the axial position is occupied by the oxygen atom of the acetone molecule. The Nd$^{III}$ ion is deca-coordinated. In addition to the two phenolate oxygen atoms, the coordination sphere contains two oxygen atoms of the OMe side arms of L and six oxygen atoms from the three bidentate nitrate ions. The Cu···Nd separation is 3.466(2) Å. The $\chi T$ versus $T$ plots, $\chi$ being the molar magnetic susceptibility per Cu$^{II}$Nd$^{III}$ unit and $T$ the temperature, has been measured in the 4.5–299.6 K temperature range. The magnetic properties of the investigated compound are dominated by the crystal field effect on the Nd$^{III}$ site, masking the magnetic interaction between the paramagnetic centers.

Key words: Heterodinuclear Complex, Copper, Neodymium, Crystal Structure, Magnetic Properties