A new dinuclear iron(III) derivative Fe₂L(OCH₃)Cl₂ (L = 1,3-bis[N-(5-chloro-2-hydroxybenzylidene)-2-aminoethyl]-2-(5-chloro-2-hydroxyphenyl)imidazolidine) has been synthesized, it crystal structure determined and magnetically characterized. The two iron(III) ions are asymmetrically bridged by a phenoxo and a methoxo group and separated by 3.150(2) Å. The magnetic susceptibility of the complex was measured over the range 5 – 349.3 K and the observed data were successfully simulated by the equation based on the spin-Hamiltonian operator $H = -J \mathbf{S}_1 \cdot \mathbf{S}_2$, indicating very weak antiferromagnetic coupling between the iron ions with $J = -11.3$ cm⁻¹. The magnetic and structural parameters of the compound and the nature of the magnetic super-exchange interaction are discussed and compared with data of similar dinuclear iron(III) complexes.

**Key words:** Dinuclear Iron(III) Complex, Super-Exchange Interactions, Antiferromagnetic Coupling, Schiff Base, Imidazolidine