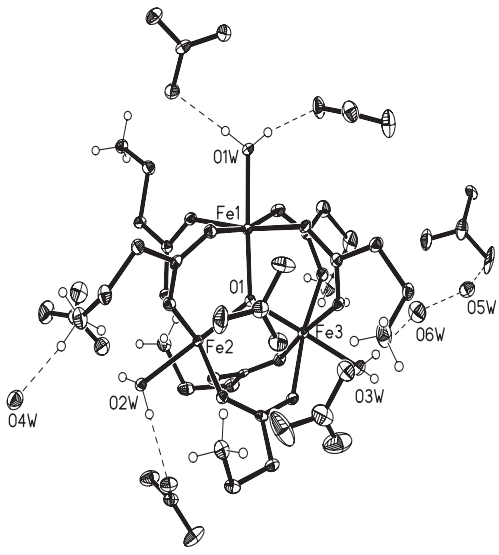
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β-ALANINATO-μ_3-OXOTRINUCLEAR IRON(III) CLUSTER AS REGULATOR OF *SPIRULINA PLATENSIS* BIOCHEMICAL COMPOSITION: CRYSTAL STRUCTURE AND SPECTRAL CHARACTERISTICS

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β-Alanine is known as a non-protein amino acid. The importance of this amino acid is that it is a precursor of vitamin B_3 and dipeptide L-carnosine, both of which revealing neuroprotective and detoxificating effects on cytotoxic α, β-aldehydes [1-3]. These biological properties together with coordination ability of amino acid have prompted us to examine the product of β-alanine interaction with iron(III) salt with the purpose of its administratingin cultivation media of *Spirulina platensis*. The new μ_3-oxotrinuclear coordination compound namely $[Fe_3O(\beta\text{-Ala})_6(H_2O)_3](NO_3)_7\cdot 3H_2O$ (**1**) was synthesized using earlier described procedure [4] and slightly modified. The title compound has been studied by single crystal X-ray diffraction, IR and ^{57}Fe Mössbauer spectroscopy. The complex **1** crystallizes in monoclinic system, $P2_1/n$ space group, with following unit cell parameters: a = 11.5141(7), b = 12.0475(8) c = 34.9902(17) Å, β = 95.157(4)º. The three iron(III) ions are joint by the central oxygen (μ_3-O^{2-}) and six carboxylate moieties. The apical positions of each metal centers are occupied by water molecules, thereby completing the octahedral coordination sphere. The presence of amino acid ligands in protonated form determined the large charge of cation-complex (+7). Thus, complex **1** presents a typical μ_3-oxotrinuclear molecular structure similar to that reported previously [4,5]. The ^{57}Fe Mössbauer spectra (MS) at room temperature and 80K of this compound, consist of two peaks, fitted as one doublet, the parameters of which indicate the presence of iron(III) in high spin state (S=5/2) with quite symmetrical environment. The complex **1** was used as supplement in cultivation media of *Spirulina platensis.* In concentrations up to 30mg/l the administrated compound increases proportionally the productivity of microalgae and improves the biochemical composition of biomass.



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References

[1] Chew Hee Ng, Han Kiat Alan Ong, Koh Sing Ngai et all. *Polyhedron,* **2005**, 24, 1503.
[2] G.Aldini, P. Granata, M.Carini, *J. Mass Spec.,* **2002**, 37, 1219.
[3] R.Tabakman, P.Lazarovici, R.Kohen, *J. Neurosci. Res.,* **2001**, 68, 463.
[4] K.I. Turte, A.G.Lazarescu, Yu.A. Simonov, et all. *Russ. J. Coord. Chem.* **1996**, 22, Nr.1, 42.
[5] Thundathil R.V., Holt E.M., Holt L., Watson K. J. *J. Am. Chem. Soc.* **1977**, 99, 1818.