

Structure, physicochemical and biological properties of an aqua (2,2',2'' - nitrilotriacetato)-oxidovanadium(IV) salt with 4-methylpyridinium cation.

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The crystal structure of a nitrilotriacetate (nta) oxidovanadium(IV) salt with 4-methylpyridinium cation, $[4\text{-Me(Py)H}]^+$, of $[4\text{-Me(Py)H}][\text{VO}(\text{nta})(\text{H}_2\text{O})]$ stoichiometry was determined. The complex comprises a discrete mononuclear $[\text{VO}(\text{nta})(\text{H}_2\text{O})]^-$ coordination entity that can be rarely found among other known compounds containing nitrilotriacetate oxidovanadium(IV) moieties. The complex was characterized by spectroscopic (IR and EPR) methods, magnetic measurements, and thermogravimetry (TG-FTIR). The stability of the title compound in aqueous solutions was investigated by using the potentiometric titration method. Furthermore, spectrophotometric (UV/Vis) studies have revealed that the compound is capable to scavenge the superoxide free radicals ($\text{O}_2^{\bullet-}$) as well as stable organic radicals i.e. 2,2'-azinobis(3-ethylbenzothiazoline-6 sulfonic acid) cation radical (ABTS $^+$) and 2,2-diphenyl-1-picrylhydrazyl radical (DPPH $^{\bullet}$). Finally, biological properties of the complex studied were investigated in relation to its cytoprotective activity against the oxidative damage generated exogenously by using hydrogen peroxide in the HT22 hippocampal neuronal cell line (the MTT assay). Additionally, the biological action of the compound towards two human osteosarcoma HOS and MG-63 cell lines (the MTT and BrdU tests) as well as the untransformed human osteoblast hFOB 1.19 cell line was tested.

Słowa kluczowe

Antioxidant, vanadium, Cytoprotective activity, Hippocampal HT22 cells, Osteosarcoma cells

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