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Extended Abstract

Synthesis and Physico-Chemical Characterization of the Cu(II), Pd(II) and Ru(III) Complexes with Difloxacin †

Ana-Mădălina Măciucă [1], Mihaela Badea [2], Rodica Olar [2], Alexandra Cristina Munteanu [1] and Valentina Uivarosi [1,*]

[1] Department of General and Inorganic Chemistry, Faculty of Pharmacy, Carol Davila University of Medicine and Pharmacy, 6 Traian Vuia Str, 020956 Bucharest, Romania; mada.maciuca@yahoo.com (A.-M.M.); alexandra.ticea@umfcd.ro (A.C.M.)

[2] Department of Inorganic Chemistry, University of Bucharest, Faculty of Chemistry, 90-92 Panduri Str., 050663 Bucharest, Romania; e_m_badea@yahoo.com (M.B.); rodica_m_olar@yahoo.com (R.O.)

* Correspondence: valentina.uivarosi@umfcd.ro

† Presented at the 15th International Symposium "Priorities of Chemistry for a Sustainable Development" PRIOCHEM, Bucharest, Romania, 30 October–1 November 2019.

Published: 15 October 2019

Keywords: quinolones; difloxacin; metal-complexes

The growing interest in metal-quinolone complexes is sustained by a large number of compounds obtained and tested for antibacterial [1], antitumoral [1,2], antifungal [1], and antiparasitic [3] properties. Having these aspects in mind, in this study, the interaction of difloxacin, a second-generation quinolone with veterinary use, with some transition metal ions was investigated.

Four metal complexes of difloxacin were synthesized in different media (weakly acidic: Cu(II) and Ru(III) complexes, weakly basic: Cu(II) complex and neutral: Pd(II) complex) and characterized with physicochemical techniques (elemental analysis, conductivity measurements, IR, UV-Vis spectroscopy) and thermal analysis (TG, DTG, DTA).

Three of the compounds present the characteristic IR absorption bands for the $\nu_{(OCO)}$ symmetric and antisymmetric bands. The difference between the two values is around 200 units, confirming that the carboxylate moiety is bound as monodentate, while the quinolone molecule is acting as a bidentate deprotonated ligand, bounded to the metalion through the pyridone and one carboxylate oxygen [4]. This is not the case of the Cu(II) complex obtained in acidic medium, as it occurs as a salt of the tetrachlorocuprate(II) complex ion. These conclusions are confirmed by the UV-visible spectra and thermal analysis. The intermediate steps corresponding to the quinolone moiety oxidative degradation were also highlighted.

Based on these findings, we propose the chemical formulas for the four synthesized compounds, which will further be subjected to DNA, serum albumin binding, and antimicrobial testing.

Acknowledgments: This research was financially supported by "Carol Davila" University of Medicine and Pharmacy through Contract no. 23PFE/17.10.2018 funded by the Ministry of Research and Innovation within PNCDI III, Program 1—Development of the National RD system, Subprogram 1.2—Institutional Performance—RDI excellence funding projects.

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