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Synthesis and spectroscopic studies of levofloxacin unidentate complexes of Ru(II), Pt(IV) and Ir(III): Third generation of quinolone antibiotic drug complexes

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Abstract

The monobasic unidentate levofloxacin (LEV; (S)-9-fluoro-2,3-dihydro-3-methyl-10-(4-methylpiperazin-1-yl)7-oxo-7H-pyrido[1,2,3-de]-1,4 benzoxazine-6-carboxylic acid) complexes of Ru(III), Pt(IV) and Ir(III) were prepared and well discussed using elemental analyses (CHN), molar conductance, infrared, electronic, effective magnetic moment, H-1-NMR, X-ray powder diffraction, scanning electron microscopy, transmittance electron microscopy and thermogravimetric (TG/DTG) analyses. The IR and electronic spectra of LEV complexes with their assignments were discussed in details which were confirmed that LEV is binding to the metal ions as a neutral unidentate ligand through the nitrogen atom of 4-methylpiperazin-1-yl moiety. The molar ratio of Ru(III) and Ir(III) chelates is 1:3 (Metal: LEV), while Pt(IV) complex has a 1:2 M ratio. The general formulas of LEV complexes have been designed as [M(L)(n)(Cl)(x)]center dot yH(2)O ((1) M = Ru³⁺, L: LEV, n = 3, x = 3, y = 8; (2) M = Pt⁴⁺, L: LEV, n = 2, x = 4, y = 4 and (3) M = Ir³⁺, L: LEV, n = 3, x = 3, y = 6. The X-ray powder diffraction was used as technique to estimate the particle size of LEV complexes. Thermogravimetric analysis (TG-DTG) was utilized to identify the presence of coordinated, uncoordinated water molecules, mass losses and residual products. (C) 2016 Elsevier B.V. All rights reserved.

Keywords

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