

Synthesis, characterization and antibacterial susceptibility testing of manganese complexes of doxycycline with bipyridine and phenanthroline

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Abstract. Three manganese complexes of the antibiotic doxycycline viz.: manganese doxycycline, $[\text{MnDox}_2]\text{Cl}_2 \cdot 2\text{H}_2\text{O}$ (**1**), and manganese doxycycline with bipyridine, $[\text{MnDox}_2(\text{bpy})]\text{Cl}_2 \cdot 8\text{H}_2\text{O}$ (**2**), and phenanthroline, $[\text{MnDox}_2(\text{phen})]\text{Cl}_2 \cdot 8\text{H}_2\text{O}$ (**3**), as the ancillary ligand were synthesized and characterized by FT-IR, elemental analysis and electrospray mass spectroscopy. The three complexes show good solubility in DMF and DMSO. Data obtained from spectroscopic techniques used show that doxycycline coordinates to the central manganese atom through the oxygen of the amide group and the carbonyl oxygen atom of ring A while bipyridine/phenanthroline coordinates through the two diimine nitrogen atoms. The stoichiometry of manganese-doxycycline is 1:2 and octahedral geometry is the preferred coordination in all the complexes.

Keywords: manganese, doxycycline, coordination, antibacterial, synthesis.

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