

E2-14 : A STUDY OF THE INTERACTION OF METAL IONS WITH SOME DRUGS

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The therapeutic activity of some drugs is affected by the formation of chelate complexes. Thus, studies on the chelating properties of drugs are important.

Complex formation of oxytetracycline with a number of metal ions was investigated using uv spectroscopy (Cu^{2+} , Mg^{2+} , Ni^{2+} , Ca^{2+} , Cd^{2+} , Zn^{2+} , Mn^{2+} and Fe^{3+}), potentiometry (Cu^{2+} , Ni^{2+} , Cd^{2+} and Zn^{2+}) and polarography (Cu^{2+} and Ni^{2+}).

The uv spectrum of oxytetracycline (pH 7) was characterised by two absorption maxima; 285 nm and 360 nm. The intensity of absorption was greater in the presence of the metal ion, thus confirming complex formation.

The potentiometric study and the polarographic study gave further evidence for complexation. The potentiometric curve of oxytetracycline is displaced in the presence of the metal ion. The characteristics $E_{1/2}$ value of the metal ion is shifted in the presence of oxytetracycline. Some indication of the stability of the oxytetracycline - metal complex is obtained from these results.

An analytical technique was developed in order to estimate the concentration of a chosen metal ion (Fe^{3+}). This determination uses the linear variation in absorbance at 490 nm of ampicillin/cloxacillin in the presence of the metal ion.