

## SYNTHESIS AND STUDY OF METRONIDAZOLE COMPLEXES WITH $\text{Fe}^{2+}$ AND $\text{Fe}^{3+}$ SALTS

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Interaction of drugs with each other, with food and drinks is an important aspect of pharmacotherapy of diseases that physicians should consider in the case of simultaneous prescription of two or more drugs since it's not always possible to predict the nature of its consequences. Thus, obtaining products of drug interaction, together with a further study of their effects on the human organism, is promising as it will provide us with an opportunity to experimentally prove the expediency or impermissibility of concurrent medication use.

The aim of our paper was to synthesize metronidazole (MTZ) complexes as a ligand with divalent and trivalent iron salts and the study of the obtained compounds.

MTZ represents 5-nitroimidazoles containing two conjugated nitrogen atoms, which, due to non-bonding electron pairs, can enter into the donor-acceptor bond with metal cations containing free orbitals, such as  $\text{Fe}^{2+}$  and  $\text{Fe}^{3+}$  cations, and are also capable of complexation.

The MTZ complexes with  $\text{Fe}^{2+}$  ( $\text{MTZ-Fe}^{2+}$ ) and  $\text{Fe}^{3+}$  ( $\text{MTZ-Fe}^{3+}$ ) salts were obtained by boiling in methanol for several hours. For the synthesis of the  $\text{MTZ-Fe}^{2+}$  complex, ligand and iron (II) sulphate salt were taken at a ratio of 2:1, and in order to synthesize the  $\text{MTZ-Fe}^{3+}$  complex, the samples of MTZ and iron (III) chloride were at a ratio of 3:1 respectively. The obtained substances have the form of crystals of orange ( $\text{MTZ-Fe}^{3+}$ ) and brown ( $\text{MTZ-Fe}^{2+}$ ) color.

The melting point of  $\text{MTZ-Fe}^{2+}$  is 156-158 °C whereas that of  $\text{MTZ-Fe}^{3+}$  is 160 °C.

The research into the spectrum nature of the obtained compounds relative to the original substance of MTZ was performed by absorption spectrophotometry in the ultraviolet light in the wavelength range from 230 nm to 350 nm. 0.001% aqueous solutions of these substances and MTZ reference solution were prepared for this study.

The nature of complex compounds spectra correspond to the reference solution spectra, with the absorption maxima observed at the wavelength of 320 nm. In contrast to the pure substance spectrum for both complexes there is a significant hypochromic effect.

In the course of the experiment the chemical interaction of MTZ with  $\text{Fe}^{2+}$  and  $\text{Fe}^{3+}$  cations was confirmed, with its products isolated. We have also planned to continue working towards establishing the composition of the synthesized compounds and confirming their structure.