

PHARMACEUTICAL PREPARATION AND IRON SALTS INTERACTION RESEARCH

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Pharmaceutical preparations market is constantly changing and evolving. Nowadays the WHO Essential Medicines List numbers almost 8,000 registered substances. Safety requirements for medications are constantly raising, that's why particular attention should be paid to drug-drug, food-drug and drink-drug interactions research. Wrong combination can reduce bioavailability, pharmacological activity, as well as increase toxicity and side effects appearance.

Considering mentioned above, the purpose of the research was to study metronidazole, ciprofloxacin, tetracycline and iron salts interactions. As far as iron salts are a part of some types of mineral water, Coca Cola and Baikal drinks, they are also included in iron deficiency drugs composition. It should be noted that the iron salts are on the food coloring list (E-172), which means that it may be used in the EU, the USA and Ukraine.

The research was carried out using UV spectrophotometry methods where the absorbance of metronidazole, ciprofloxacin, tetracycline and their ferrous sulfate, ferric chloride complexes was measured. Solutions were prepared using the same method: the exact weight of a substance dissolved in the purified water with a few drops of phenolphthalein and were used 0.1 M sodium hydroxide solution adding until the color of the solution changes to a slightly pink, then samples of metal salts were added to the drugs solution in the ratio of (2:1 (FeSO_4) and 3:1 (FeCl_3)), diluted to 100.0 ml with the same solvent and 5.0 ml of this solution diluted with a purified water to a volume of 100.0 ml.

There was no significant difference in the absorption maxima between the correspondent pharmaceutical substances given alone and given with various iron salts. The absorption maxima were registered at the same wavelength, namely, metronidazole showed λ_{max} at 320 nm, ciprofloxacin – at 276 nm, tetracycline – at 358 nm. However, the absorbance intensity difference could be observed between the complexes studied and the water solution of drug substance.

In terms of the results obtained in experimental conditions, we may conjecture that formation of complexes, which can influence pharmacotherapeutic activity can be possible as a result of the interaction between specified drug substances and iron salts.