RESEARCH OF THE POSSIBLE INTERACTION OF FAMOTIDINE WITH METAL SALTS BY UV-SPECTROPHOTOMETRY

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Introduction. Famotidine, 3-[[[2-[(Aminoiminomethyl)amino]-4-thiazolyl]methyl] thio]-N-(aminosulfonyl)propanimidamide – $C_8H_{15}N_7O_2S_3$ – H_2-antihistaminic preparation. By blocking of histamine H_2-receptors it inhibits both basal and stimulated acid secretion; it also inhibits the activity of pepsin. It is not fully absorbed from the digestive tract, bioavailability is 40-45%, increases under the influence of food and decreases with the use of antacids. Binding to plasma proteins is 15-20%.

The aim of this work is to study the effect of metal salts on the physicochemical properties of famotidine. Such interaction plays an important role in the manifestation of the biochemical and pharmacological properties of the drug, its pharmacokinetics and side effects. Thus, the formation of complexes can reduce bioavailability and inhibit the digestion of famotidine at the stage of absorption. It is also important because famotidine as the anti-ulcer agent is often used in combination with antacids that contain a significant amount of metal salts. Also, metal salts may be contained in a sufficient amount of other medicines and some kinds of food.

Materials and methods. Considering the solubility of the drug 0.1 M hydrochloric acid solution was used as a solvent. The interaction of the drug with metal salt samples was not accompanied by any visual effects. To further investigate the possible of drug interactions the weight amount of about 0.1000 g of famotidine and weight amount of metal salts (calcium, magnesium, aluminium), which were taken in the stoichiometric ratio of the rate of 1 mole of bivalent metal equivalent to 2 mole of famotidine, and 1 mole of trivalent metal equivalent to 3 mole of famotidine, were placed into 100.0 ml volumetric flask, dissolved in 0.1 M hydrochloric acid solution and brought to the mark with the same solvent. The aliquot of 2.0 ml of the resulting solution was diluted with the same solvent to the 100.0 ml volume. Absorption spectrophotometry in the ultraviolet range of wavelengths from 220.0 nm to 350.0 nm was chosen as a research method. As the blank solutions the 0.1 M hydrochloric acid solutions of the same metal salts were used.

Results and discussion. In carrying out spectrophotometric readings differed little from the control data. In all cases, the absorption maximum was at the range of 265.0-267.0 nm. The addition salts of calcium significantly increased the intensity of the absorption, while magnesium salt contributed to its decline. The most significant decrease in the absorption rate was observed in the presence of aluminium salts, suggesting a possibility of its chemical interaction with famotidine.

Conclusions. The obtained results confirm the importance further research of interaction of famotidine with the antacids and other metal salts containing drugs.