IN VITRO STUDY OF THE BIOEFFECTIVENESS OF A TABLET WITH A SEDATIVE EFFECT

Anvarova M.J.[1]
Turdiyeva Z.V.[2]
Tashkent Pharmaceutical Institute, Tashkent city, Republic of Uzbekistan
e-mail: zilola1988@gmail.com
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Relevance: One of the current problems in the pharmaceutical industry is the creation of innovative, highly bioeffective, affordable, and low-toxic drugs based on local medicinal plant raw materials, as well as the localization of the production of recommended drugs. Biopharmaceutical properties of research in the development of new drugs assess their pharmacological effects. The study of biopharmaceutical properties eliminates doubts about the bioefficacy of the proposed drugs and the use of finished drugs in terms of their biopharmaceutical properties. It is known from the literature that the final stage of research on the composition and technology of a particular drug is devoted to studying the bioefficacy of the proposed drug. The results of this study, in turn, provide a guarantee for the quality of the finished product, that is, its bioactivity. Biopharmaceutical research begins with in vitro experiments and is correlated with in vivo studies. The in vitro method is an instrumental method and is used in almost 90% of pharmaceutical enterprises in the development of drugs to conduct biopharmaceutical analyses and study the quality of the finished product.

Purpose of the study: The biopharmaceutical properties of the recommended sedative tablets were studied in vitro. These studies were carried out in a "Rotating centrifuge" device. In experimental studies, factors related to bioefficacy, such as the volume and pH of the solvent medium, and the speed of the centrifuge rotation, were studied.

Methods and techniques: In the study of the biopharmaceutical properties of the recommended tablets in vitro, we studied the factors affecting bioefficacy, such as the volume of the medium, the pH of the dissolution medium, the effect of the rotation speed of the rotating flask on the release of bioactive substances. In the next study, the effect of the rotation speed of the flask on the release of the recommended granules was continued using the "Rotating flask" method. Based on the sensitivity of the bioactive substances contained in the recommended tablets in the studies, the solution volume was selected as 1000 ml. The experiments were planned and carried out at speeds of 50, 100, 150 and 200 m/min. The next stage of the research continued with the study of the pH of the dissolution medium. The dissolution mediums for the experiments were different: purified water - neutral medium, 0.1 mol/l hydrochloric acid solution - acidic medium and 0.1 mol/l sodium hydroxide solution - alkaline medium. The results showed that 85.9% of bioactive substances were released in 45 minutes in a neutral medium. It was observed in the studies that this indicator was 66.4% and 58.5% in acidic and alkaline environments, respectively. Based on the research results, it was determined that a neutral medium for a tablet with a sedative effect is specific for the release of bioactive substances contained in the tablet into the dissolution medium.

Results: The obtained indicators show that the release of bioactive substances from the recommended tablets into a neutral environment reached 54.1% in 15 minutes, 79.4% in 30 minutes, and 85.9% in 45 minutes.

Conclusions: Based on biopharmaceutical studies conducted in "in vitro" experiments, the biopharmaceutical properties of the recommended drugs were determined and the conditions for conducting the "Solubility" test were proposed.