DEVELOPMENT OF DISSOLUTION TEST TO DETERMINE THE BIOEQUIVALENCE OF MEDICINES WITH ACECLOFENAC

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Introduction. To date, most drugs in the pharmaceutical market are reproducible generic drugs. Clinical practice has shown that the finished drug from different manufacturers with the same amount of active substance in the dosage form differs in both therapeutic efficacy and frequency of adverse reactions. In most cases, this is due to changes in their bioavailability. In this regard, there is a need to determine the bioequivalence of drugs to ensure the same proper efficacy and safety. For solid dosage forms, a prerequisite for bioequivalence is a pharmacotechnological test - the "Dissolution" test.

On the Ukrainian pharmaceutical market, generics with the active substance - aceclofenac are presented by several manufacturers in dosage form - modified-release tablets. The active substance is a derivative of phenylacetic acid, the presence of dichlorophenylamino in the molecule of aceclofenac leads to increased selectivity to COX 2, and reduced exposure to COX 1, in contrast to its predecessor - diclofenac. The advantage of aceclofenac is also the minimal number of side effects on the gastrointestinal tract and cardiovascular system, which makes it a representative of the "golden mean" of non-steroidal anti-inflammatory drugs in the treatment of inflammatory processes of the musculoskeletal system (rheumatoid arthritis, juvenile and psoriatic arthritis, gouty arthritis, osteoarthritis), and also to eliminate pain of various origins (lumbar, toothache, etc.).

Aim. The aim of the study was to develop a test "Dissolution" of aceclofenac in tablet dosage forms from different manufacturers.

Materials and methods. In order to prove the equivalence of two generic drugs with a branded drug, the procedure of comparative studies in vitro, conducting a test "Dissolution", according to the requirements of the State Pharmacopoeia of Ukraine was used. As the dissolution medium of aceclofenac gastro-soluble tablets used a 0.1 M solution of hydrochloric acid, at a temperature of 37±0.5°C, a blade speed of 75±5 rpm, in a volume of dissolution medium of 900 ml. Sampling was performed every 30 minutes for 3 hours, taking 20 ml of sample and replacing with an equal volume of 0.1 M hydrochloric acid solution. The samples were filtered and analyzed by spectrophotometric method. The quantitative content of the active ingredient was calculated by the standard method.

Results and discussion. A prerequisite for performing spectrophotometric analysis is the presence of specific absorption maxima in the absorption spectrum of the test compound. The absorption spectra of aceclofenac in 0.1 M hydrochloric acid solution were studied, the maximum was observed at a wavelength of 273 nm, which was chosen to study the release of the active substance from the drug. The results of the study indicate that there is a gradual release of the active pharmaceutical ingredient from the drug, after 60 minutes there is a release of half the dose of the drug from all manufacturers, and after 90 minutes the release was more than 80% of aceclofenac in all samples.

Conclusions. The Dissolution test is a very important in vitro test for assessing the efficacy and quality of medicines. Due to the high demand for aceclofenac tablets, a dissolution test method has been developed. Dissolution medium - 900 ml of 0.1 M hydrochloric acid solution, determination temperature - 37±0.5°C, blade speed - 75±5 rpm. Release of 80% of the drug is observed after 90 minutes.