

CONCEPTUAL APPROACH IN THE STUDY OF THE COMPOSITION OF MEDICATIONS: THE PRESENCE OF RELATED COMPOUNDS OF ACTIVE COMPONENTS

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When performing pharmaceutical analysis of a medical product, an important role is played by the conceptual approach to the analysis, according to the previously developed research concept, namely, a comprehensive analysis of the composition of the medications, taking into account all possible changes in the composition during the synthesis and manufacture of the drug, during its storage, etc.

In addition to mandatory quality control of medications in accordance with the requirements of pharmacopoeial monographs, non-pharmacopoeial reactions and instrumental methods are used for analysis. In addition, it is necessary to analyze the presence of predicted and unpredicted impurities that are formed during the synthesis or production of the medication [1; 2].

One of the negative factors that affects the quality of the drug substance and medication is the formation of «heavy» related compounds. Related substances are formed during the synthesis of active components of medications, as a result of the formation of several reaction products, as well as the ability of the molecules of the main reaction product to interact.

For example, the related compounds of acetylsalicylic acid (ASA) are the greatest threat to the human body. They are hydrophobic, easily penetrate the membranes of cells of the gastrointestinal tract and bind to peptides, blocking protein cells.

Methods of qualitative and quantitative ASA analysis are also used in chemical-toxicological or criminal analysis in case of human poisoning with pharmaceutical compositions containing ASA or SA [3, p. 136].

The quality control of pharmaceutical compositions with ASA is not regulated by many pharmacopoeias. Pharmaceutical control of related compounds in the composition of these medications is regulated by the British and European Pharmacopoeias [4; 5]. There are six related compounds: 4-hydroxybenzoic acid; 4-hydroxybenzene-1,3-dicarboxylic acid; salicylic acid; acetylsalicylsalicylic acid; salsalate; acetylsalicylic anhydride.

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For analysis of these ASA related compounds use method of liquid chromatography (acetonitrile as solvent for solutions, mobile phase: phosphoric acid *R*, acetonitrile for chromatography *R*, water *R*), detection on spectrophotometer at 237 nm.

We have proposed a modification of the method for the determination of ASA related compounds, namely: methanol as solvent for solutions of ASA pharmaceutical compositions; method HPLC (Waters Alliance 2695, USA; diode array detector «Waters 996»; column «BDS HYPERSIL C18» 150x4.6 mm with average grain size 5 μ m).

When performing chromatography, water-acetonitrile (90:10) was used as a weak component of the mobile phase, acetonitrile – as a strong component of the mobile phase, water-acetonitrile-TFA (50:50:1) – as an acidic component of the mobile phase.

For analytical purposes, a wavelength of 274 nm was used, since under these conditions the effect of impurities in the mobile phase is leveled.

On the chromatogram of one of the investigated ASA pharmaceutical composition a signal of ASA related substance salsalate at RT \approx 3.28 (RT \approx 3.2, B.Ph.).

Thus, the method for determining ASA related compounds in the pharmaceutical compositions has been modified, and the use of HPLC method increases the accuracy of the determination of these toxic compounds.

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