DEVELOPMENT OF THE ISOLATION PROCEDURE FOR PHENYTOIN USING SODIUM HYDROXYDE

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Anticonvulsant and antiepileptic drugs become the objects of investigations in practical work of chemists-toxicologists often enough – the medicines are drastic, and the cases of poisonings by them are widespread. In literary sources there is the information about the cases of acute and lethal phenytoin poisonings.

Research purpose. In this paper we set ourselves as an object to develop the optimal conditions of phenytoin isolation from biological matrices.

Materials and methods. 10 g of the model mixture of biological material with phenytoin were placed into the mortar, 10 g of clean sand were added to it and the mixture were ground carefully. The homogenized mass was placed into the beaker, the mortar was washed by 20 ml of water and washing liquid was placed into the beaker. 2 ml of 10% sodium hydroxide solution were added into the beaker with the homogenized biological material. The beaker content was kept for 30 min. while continuously shaking, following which the mixture was centrifuged (during 30 min. under 3000 revolutions per minute) and the centrifugate was collected into the clean beaker. Infusion of biological material with new portions of alkalescent water was carried out twice for 30 min more. 0.05 mole/dm^3 sulphuric acid solution was added to the joint alkaline water extracts to pH = 2. The liquid was heated on the water-bath for 20 min., and then centrifuged (during 30 min. under 3000 revolutions per minute). The centrifugate was collected into the separating funnel and extracted by equal volume of diethyl ether three times. The obtained extracts («acid» ether extract) were joint and extracted by 10% sodium hydroxide solution by portions of 20 ml twice. 25% sulphuric acid solution was added to the joint alkaline water extracts to pH = 2 and the liquid was extracted by equal volume of diethyl ether twice. The obtained extracts («acid» ether extract) were joint, filtrated through the paper filter («red strip») with 1 g of sodium sulphate anhydrous into the measuring flask with the capacity of 50.0 ml and the solution was diluted to the volume by diethyl ether.

The obtained extract was used for identification of phenytoin by the methods of thin layer chromatography (TLC), gas-liquid chromatography (GLC), high-performance liquid chromatography (HPLC) and for its quantitative determination by the methods of GLC, HPLC, UV-spectrophotometry and extraction photometry.

Results and conclusion. The developed procedure allowed to isolate about 80% of medicine from the solid biological matrices.