THE USE OF THE SEEDS OF E. diffusum FOR OBTAINING STROPHANTHIDIN ACETATE

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The glycosides of the cardiac group have a limited distribution in the vegetable kingdom, because of which any partial synthesis of drugs with a cardiac action is of interest. One of such compounds is strophanthidin acetate, which is synthesized by the acetylation of the natural aglycone strophanthidin [1]. N. K. Abubakirov, M. B. Gorovits, and R. Sh. Yamatova have proposed the use strophanthidin acetate as a drug with a cardiotonic action. Pharmacological investigations [2] have confirmed its high effectiveness.

The most promising raw material for the production of the drug is Erysimum diffusum Ehrh., which contains about 8% of cardiac glycosides [3]. Of the nine individual glycosides found in this plant, six have the aglycone strophanthidin [4].

We have developed a method for producing strophanthidin acetate from E. diffusum seeds without the isolation of individual glycosides.

The comminuted and gasoline-defatted seeds of E. diffusum were extracted seven times with 96% ethanol by the steeping method. The solvent was distilled off from the combined extract. To eliminate fat-like and other ballast substances of hydrophobic nature, the still residue was treated with diethyl ether, and to eliminate hydrophilic impurities that had deposited in the precipitate the glycosides were dissolved in the minimum amount of methanol, the solution was diluted with 19 volumes of water, and the aqueous methanolic solution was subjected to successive purification on ÉDÉ-10-P and KU-2 ion-exchange resins. The purified faintly yellowish solution was acidified with 20% sulfuric acid to pH 1.7 and left for two days. The strophanthidin was extracted from the acid hydrolyzate with chloroform. The chloroform extract was evaporated in a rotary evaporator to dryness. The residue was crystallized from a mixture of methanol and water (1 : 1). The yield of strophanthidin was 2.18% on the weight of the raw material. The strophanthidin obtained was dissolved in pyridine and acetylated with acetic anhydride for a day at room temperature. After the lapse of this time, the reaction mixture was poured into water and the mixture was kept in the refrigerator at +3°C for 20 h. The crystals that had deposited were separated off, washed with cooled water, and dried. Then they were recrystallized from ethanol. The yield of the preparation was 1.85% of the weight of the raw material, mp 234-236°C.

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