

Mechanochemical Preparation of Salicylic Esters of Cellulose

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Synthesis of new esters of cellulose by ecologically pure ways is very actual because of wide application of various esters of cellulose as in national economy in general as in pharmacy in particular. The possibility of preparation of esters of cellulose and salicylic acid by one-stage mechanochemical synthesis from solid initial components have been investigated. This process may be used as model for the synthesis of esters of cellulose and aromatic acids and also is of great interest because of possibility to change number of parameters for process optimization and achievement of higher modification degree with simultaneous decrease of consumption coefficients.

The synthesis of salicylic ester of cellulose was carried out in the planetary mill AGO-2 from microcrystalline cellulose and salicylic acid. The influence of time of preliminary mechanochemical treatment of reagents and of addition of alkalis on the modification degree of cellulose hydroxyl groups was investigated. The obtained esters were isolated in pure form and studied by means of IR-spectroscopy, X-Ray diffraction and Differential thermal analysis. Quantitative content of salicylates in samples was determined by HPLC in the form of salicylic acid after complete hydrolysis of the sample. It was shown that under the conditions of synthesis the modification degree is up to 16,4 residues on 100 cellulose elementary units.

Thus, the opportunity to obtain cellulose salicylic ester by mechanochemical way is shown.